

100% INFORMATION SERVICES INDUSTRY REPORT

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1985 INFORMATION SERVICES INDUSTRY REPORT

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ABSTRACT

This report is a comprehensive look at the information services industry in 1984 and 1985. Performance is analyzed for companies which offer processing services, software products, professional services, and turnkey systems. Microcomputer-based software and services revenues are also analyzed separately.

For each of these modes of software and services delivery, the report provides statistics and analyses covering the market, the distribution of revenue by type of company, and lists the largest and/or fastest growing vendors in that market. Case studies of public companies in each market are also provided.

A separate chapter is dedicated to the effects of mergers and acquisitions on the information services industry. The potential impact of this activity is analyzed for the years 1985-1989.

This report contains 151 pages, including 67 exhibits.



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I INTRODUCTION

I INTRODUCTION

A. PURPOSE

- This INPUT Information Services Industry Annual Report is designed for industry managers and financial analysts who wish to gain a fuller understanding of the size, growth trends, and key issues of this rapidly changing industry.

B. SCOPE

- The data contained in this report resulted from the integration of numerous INPUT research programs:
 - INPUT's Company Analysis and Monitoring Program (CAMP) tracks over 4,500 information services companies. CAMP data was used to verify and supplement data obtained from the interview program outlined below.

- Data on public companies was obtained from INPUT's Vendor Financial Watch which tracks the quarterly financial performance of over 100 public information services companies. Company data are extracted from published sources, annual reports, and 10-K reports, supplemented by INPUT's best judgment where data are not currently available.
- Financial data provided include each vendor's revenue and net income. Data is reported on a calendar basis. Comparisons on performance are provided for:
 - . 1985 versus 1984 (year-on-year, by quarter).
 - . 1984 versus 1983 (year-on-year).
 - . Last calendar nine months results compared to the year earlier.
 - . Last calendar six months results compared to the year earlier.
- INPUT's Market Analysis Planning Service (MAPS) was used to provide detailed forecasts for the five-year period 1984-1989.
- An extensive, ongoing interview program (see Methodology below) was used as the vehicle for the primary research data that represents much of this report. The questionnaire used in this program is included as Appendix D.
- A complete list of related INPUT reports is included as Appendix E.

C. METHODOLOGY

- From January through April 1985, INPUT interviewed over 750 information processing vendors. The major research activities included:

- A census of all companies with annual revenues of \$10 million or more from non-captive U.S. information services:
 - . More than 400 companies were researched.
 - . Over 350 companies were interviewed by telephone. Estimates were provided by senior INPUT staff where necessary.
- A stratified random sample of companies with non-captive U.S. annual revenue greater than \$250,000 but less than \$10 million. Over 400 companies were interviewed by telephone.
- The distribution of the companies included in this research by size, type of information service is presented in Exhibit I-1. Seven hundred thirty-four interviews form the research base.
- Companies with microcomputer-related revenue were also segmented and analyzed. The distribution of these companies in the research base is displayed in Exhibit I-2.
- The revenue data included in this report, unless otherwise noted, include only the following:
 - U.S. Revenue - Only revenue derived from products or services sold in the U.S. are included. All foreign revenue is excluded.
 - Information Services Revenue - Revenue from processing services, software products, professional services, and turnkey systems are included. Revenue from hardware-only sales, telecommunications, and field engineering services are excluded.

EXHIBIT I-1

NUMBER OF COMPANIES IN RESEARCH BASE BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY	SIZE OF COMPANY		
	< \$10 MILLION	≥ \$10 MILLION	TOTAL
Processing Services	125	118	243
Software Products	132	80	212
Professional Services	76	95	171
Turnkey Systems	49	59	108
Total	382	352	734

EXHIBIT 1-2

NUMBER OF COMPANIES IN RESEARCH BASE REPORTING MICROCOMPUTER-RELATED REVENUE BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY	SIZE OF COMPANY		
	< \$10 MILLION	≥ \$10 MILLION	TOTAL
Processing Services	19	30	49
Software Products	67	43	110
Professional Services	26	29	55
Turnkey Systems	19	31	50
Total	131	133	264

- Non-Captive Revenue - Only revenue available to all vendors in a competitive marketplace are included. Revenue derived from sales to parent or affiliated organizations are excluded.
- Calendar Year Revenue - Approximately 30% of the companies have fiscal years that do not coincide with calendar years. Revenue of these companies have been adjusted to a calendar year basis for consistency.
- All revenue data were rounded to the nearest \$1,000 when gathered and tabulated, and then rounded to the nearest \$1 million when reported in this study.
 - Rounding to the nearest \$1 million was done to normalize for the lesser degree of accuracy where data was estimated by INPUT.
 - Revenue reported by private companies, subsidiaries of larger corporations, computer manufacturers, and CPA firms are generally subject to a wider margin of error than are revenue of other companies.
- Companies that are not exclusively involved in information services are identified as follows:
 - If a division or its subsidiary markets all information services for a company and is generally known by the name of that group, then it is identified by that name rather than the parent's name. An example is Boeing Computer Services Company.
 - If more than one division or its subsidiary markets information services, the information is included in, and identified by, the parent's name. An example is Control Data Corporation.
 - Organizations are reported according to their legal status as of the end of December 1984. An example is Bradford National, known since February 1985 as Fidata.

- Companies have been classified according to the mode of service from which they derive the largest proportions of their U.S. non-captive information service revenue. The modes of service, defined in detail in Appendix A, Section B, include processing services, software products, professional services, and turnkey systems.

II EXECUTIVE SUMMARY

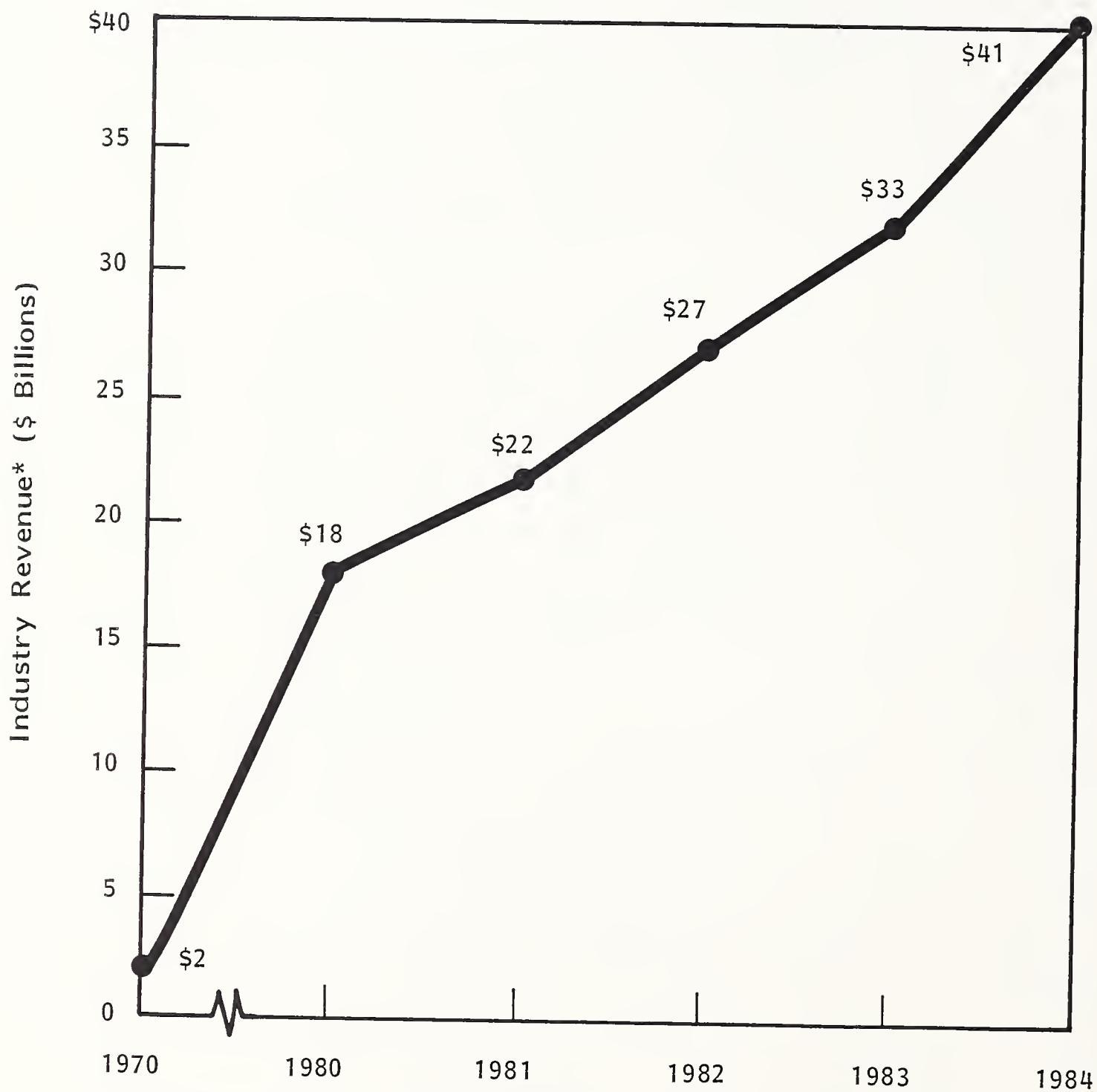
II EXECUTIVE SUMMARY

A. THE INFORMATION SERVICES INDUSTRY, 1984

- The information services industry continued its high rate of growth in 1984, advancing from 1983 revenue of \$33 billion to 1984 revenue of \$41 billion. The 24% growth rate achieved in 1984, after a healthy 23% rate in 1983 puts the information services industry among the leading growth industries over the last five years (see Exhibit II-1).
- This overall picture of growth evidences some dramatic changes in industry composition:
 - The software products vendors have gotten ahead of their end-user's ability to digest new products and must gear their development plans to a slower pace of implementation.
 - Turnkey systems vendors are now suffering from the lack of continuing revenues--when the markets they serve suspend purchase decisions, there are no alternative sources of revenue.
 - The processing services sector is now reaching maturity; this will drive the main vendors to seek out new avenues of growth and step up their acquisition activity in order to meet stockholder expectations.

EXHIBIT II-1

REVENUE GROWTH IN THE
INFORMATION SERVICES INDUSTRY, 1970-1984



*NOTE: Definition changes have slightly affected gross market sizes on a year-to-year basis.

- Professional services vendors continue to grow revenue and net income at rates that in good times look weak to vendors in other delivery mode sectors but in hard times, such as the present, look downright attractive.

B. REVENUE AND NET INCOME GROWTH BY MODE OF SERVICE

- The last half of 1984 and the first half of 1985 have seen a sharp slowdown in the growth of revenue and net income of all four service delivery mode sectors. Some are suffering more than others, but there is no question that there is an across-the-board slowdown in the buying decision process (see Exhibit II-2).
- Individually, the delivery mode sectors have performed, as follows:
 - The software products industry, the star performer in 1983 and 1984, has taken a sharp tumble with revenue growth in major public companies cooling to a modest 17% in the first quarter of 1985 and net income down 48%. In the second quarter net income rebounded sharply, however, on a slight upturn in revenue.
 - Public turnkey systems, which had begun a recovery in the early part of 1984, registered sharply lower profits in the first two quarters of 1985 on steadily declining revenue growth.
 - Public professional services, which has had modest growth since 1982, continued at a steady 16% revenue growth in the first quarter and 19% in the second quarter. Net income continued to grow.
 - Public processing services, the largest industry component, grew revenue at a slower pace with minor growth in net income.

EXHIBIT II-2

REVENUE GROWTH BY MODE OF SERVICE

	INDUSTRY		PUBLIC COMPANIES	
SERVICES	1983	1984	Q1 1985	Q2 1985
Processing Services	13%	16%	16%	14%
Software Products	35	33	17	21
Professional Services	21	20	15	19
Turnkey Services	28	30	14	9
Total Services	25%	28%	16%	15%

C. SALES LEADERS BY DELIVERY MODE , 1984

- As in the past four years, ADP was the leader of the information services industry with a 1984 calendarized sales volume of \$820 million, an increase of 19% over 1983. Although this tremendous growth can be expected to cool in 1985, ADP will become the first service company (i.e., that is not a hardware manufacturer) to reach \$1 billion in information services sales by 1986.
- IBM, which in the space of three years has begun a drive in remote computing (with the Information Network group), also dominates the software products market with \$2.25 billion of sales (INPUT estimate) in 1984. This is one of IBM's prime growth targets for the late 1980s, and INPUT expects IBM's influence in software to become as pervasive as its position in computer hardware.
- Computer Sciences Corporation had the largest sales in professional services in 1984, but growth was a small 8%. This is a market where the Big Eight accounting firms are making a strong push, with measurable success.
- Despite its difficulties in switching to IBM-compatible hardware, Computer-vision emerged as the leading turnkey systems vendor in 1984. Competition in this area is fierce and sales demand is weak, which accounts for the severe pressures this sector is experiencing in net income performance.
- Exhibit II-3 lists the 1984 sales leaders in each delivery mode.

D. GROWTH LEADERS BY DELIVERY MODE, 1984

- The information services industry, for all its restructuring and ups and downs, is replete with opportunity and growth potential. Despite the size of the

EXHIBIT II-3

SALES LEADERS BY DELIVERY MODE, 1984

COMPANY	DELIVERY MODE	Revenue* (\$ Millions)	GROWTH 1983-1984 (Percent)
ADP	Processing Services	\$ 820	19
IBM	Software Products	2,250	32
CSC	Professional Services	463	8
Computervision	Turnkey Systems	306	30

* Calendarized Revenue (January 1 thru December 31)

processing services sector and the dynamics of the software products sector, the turnkey systems sector produced the fastest growing company--Daisy Systems, as shown in Exhibit II-4.

- Like most successful young companies, Daisy Systems has concentrated on satisfying the needs of a well-focused market (in this instance, computer-aided engineering (CAE)).
- In the software products arena, Lotus Development continues its outstanding performance. Maintaining its 1984 performance through 1985 will be impossible, but with sales of \$44.6 million in the first quarter, growth of around 80% can be expected this year.
- AGS Computer tops the professional services market with a growth of 103% in 1984 over 1983. Growth in the first quarter of 1985 slowed to 28%, well below expectations.
- McDonnell Douglas Information Services growth in 1984 was primarily the result of an aggressive acquisition policy. The company must now begin to create profits in line with its size.

E. INFORMATION SERVICES ACQUISITION ACTIVITY

- Over 140 acquisition transactions at a value in excess of \$3.5 billion were made in 1984 according to Broadview Associates. The industry's two largest transactions ever, occurred with the acquisition of Tymshare by McDonnell Douglas (\$307 million) and EDS by General Motors (\$2.5 billion). Exhibit II-5 depicts acquisitions activity in the information services industry from 1980-1984.

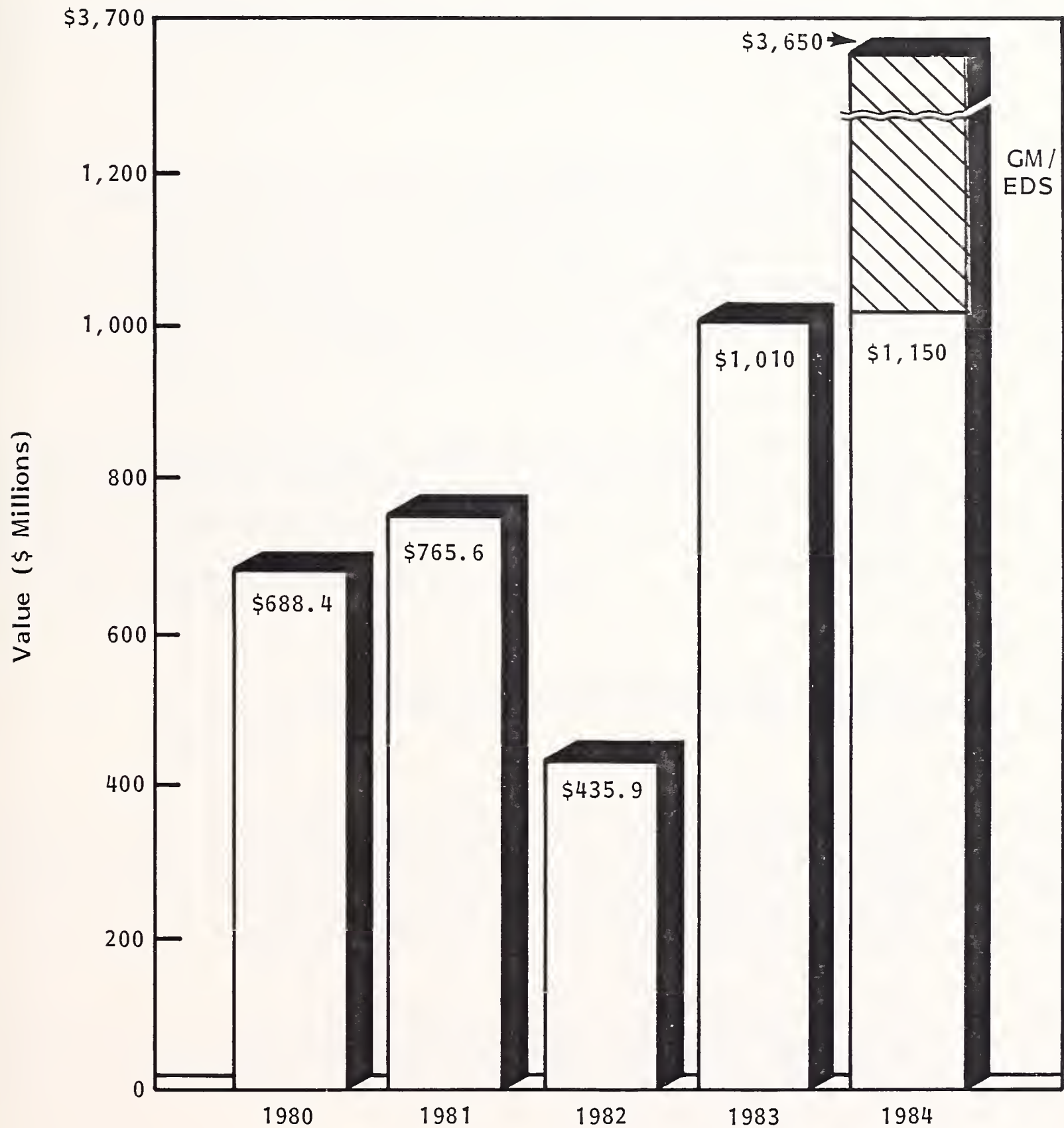
EXHIBIT II-4

GROWTH LEADERS BY DELIVERY MODE, 1984

COMPANY	DELIVERY MODE	GROWTH RATE 1983-1984 (Percent)
Daisy Systems	Turnkey Systems	249%
Lotus Development	Software Products	178
AGS Computers	Professional Services	103
McDonnell Douglas I.S.	Processing Services	101

EXHIBIT II-5

INFORMATION SERVICES ACQUISITION ACTIVITY



Source: Broadview Associates

- This level of activity is likely to decrease during 1985 as:
 - Acquirers digest their recent targets.
 - Investors get over the bad taste left by the slump in microcomputer software company performance.
 - Uncertainty over the market direction and health persist throughout 1985.
- To replace growth-by-acquisition strategies, vendors are turning to strategic partnering where complementary partners are joined on an interim or trial basis for the purpose of exploiting specific market opportunities. The number of such agreements has begun to soar as vendors try to position themselves (offensively and defensively). There is a fear of being "locked out" of markets by powerful partner combinations of competitors.
- Nevertheless, there are still over 7,000 vendors sharing a \$41 billion revenue base (very unequally). This suggests that the industry concentration will continue through company failures and mergers/acquisitions for the foreseeable future.

F. PUBLIC COMPANY OVERALL PERFORMANCE

- After a very successful 1983 and early continuation of that trend in the early part of 1984, the growth of public information services companies began to slow. Most were unprepared for this sudden change in fortune and did not control costs fast enough. As a result, net income growth cooled sharply.
- By the fourth quarter of 1984 net income growth was down to a small 7% above 1983. In the first quarter of 1985 revenue growth was a modest 16%

over 1984 and resulted in a 20% contraction of net income. The two groups most severely impacted were turnkey systems and software products which had declines in net income of 75% and 48%, respectively.

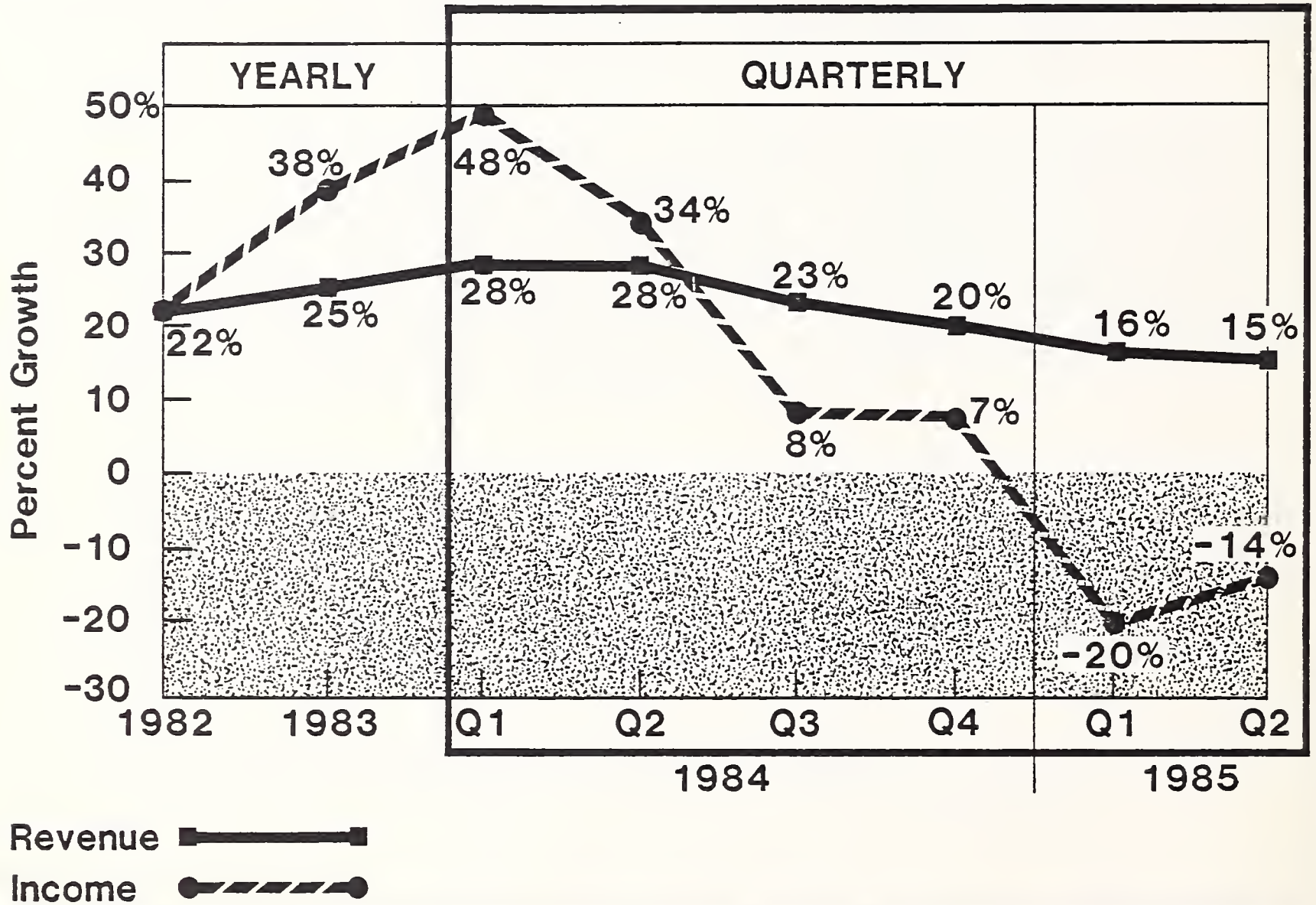
- Processing services vendors showed a 15% increase in net income in the first quarter of 1985, while professional services vendors, as a group, showed a steady 16% growth in net income. Over the last 13 quarters, the professional services market has been the most consistent market of all with none of the roller coaster movements of the software products market.
- The information services industry as a whole had its slowest revenue growth quarter of the past three years in the second quarter of 1985 and the first ever contraction in overall net income in both the first and second quarters of 1985. Preliminary results for the third quarter look undecidedly better, however, and indicate a reversal of the downward trend of the last four quarters.
- Exhibit II-6 details the quarterly performances.

G. INDUSTRY FORECASTS, 1984-1989

- The information services industry has reached an interesting stage in its development:
 - The processing services market is now mature with the top 25 vendors capturing 40% of the revenues. Growth will now slow, consolidation through acquisitions will continue, and the average net income will stabilize.
 - The software products market is in its growth phase. Excluding IBM, the top 25 vendors account for only 19% of the total revenues. New

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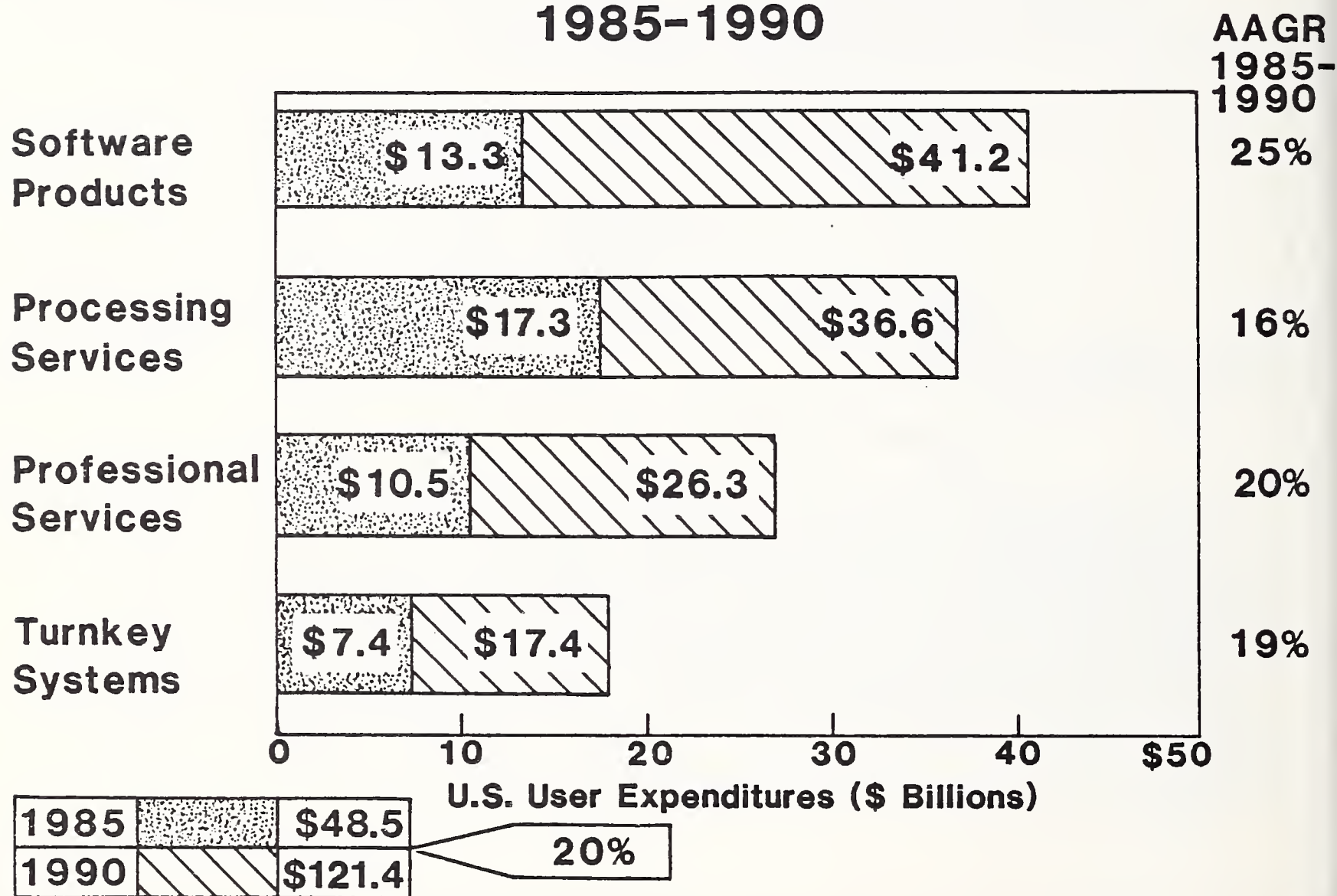
PUBLIC INFORMATION SERVICES VENDORS



company formation continues, company failure rate is high, and the range of net income is extremely broad.

- The professional services market is in a transition phase. New system development tools are coming on-line (FGL, RDB, etc.), new markets are opening up (e.g., network consulting/design/implementation), and vendors are trying to productize their capabilities to obtain leverage from off-the-shelf modules of code.
 - The turnkey systems market is floundering. The attachment of vendors to narrow vertical markets has proven to be a boon and a bane. When times are good growth is strong, when times are bad there is no alternative source of revenue, with major impact on the financial well-being of the vendors.
- Exhibit II-7 provides the 1984-1989 forecast for those markets.

INFORMATION SERVICES FORECASTS 1985-1990



III ACQUISITIONS AND STRATEGIC PARTNERING

III ACQUISITIONS AND STRATEGIC PARTNERING

- Over the last 14 years the yearly rate of acquisitions of all types in the U.S. has decreased from over 6,000 per annum to just over 2,500. During that same period, the rate of mergers and acquisitions in the information services industry alone has steadily risen, from a small 20 per year to nearly 150 by the end of 1983.

A. INFORMATION SERVICES ACQUISITIONS, 1984

- In the first six months of 1984, the value of information services acquisition transactions rose to a staggering \$3.65 billion, mainly on the strength of the two largest acquisitions in the history of the industry (the purchase of Tymshare by McDonnell Douglas in March 1984 for \$307 million and the purchase of Electronic Data Systems by General Motors for \$2.5 billion in June 1984). Other significant acquisitions (i.e., those over \$10 million in value) include the leveraged buyout of CGA Computer Associates assisted by General Atlantic Corporation (\$44.3 million), Lockheed's purchase of Datacom Systems (\$38 million), Computer Associates' purchase of Sorcim (for \$17.6 million) and of Johnson Systems (\$16 million), and AGS Computers' purchase of SDA Software Inc. for \$12.7 million.
- The pace of acquisitions is now beginning to slow, however, as the average size of the individual transaction has increased. It is likely that 1984 will be

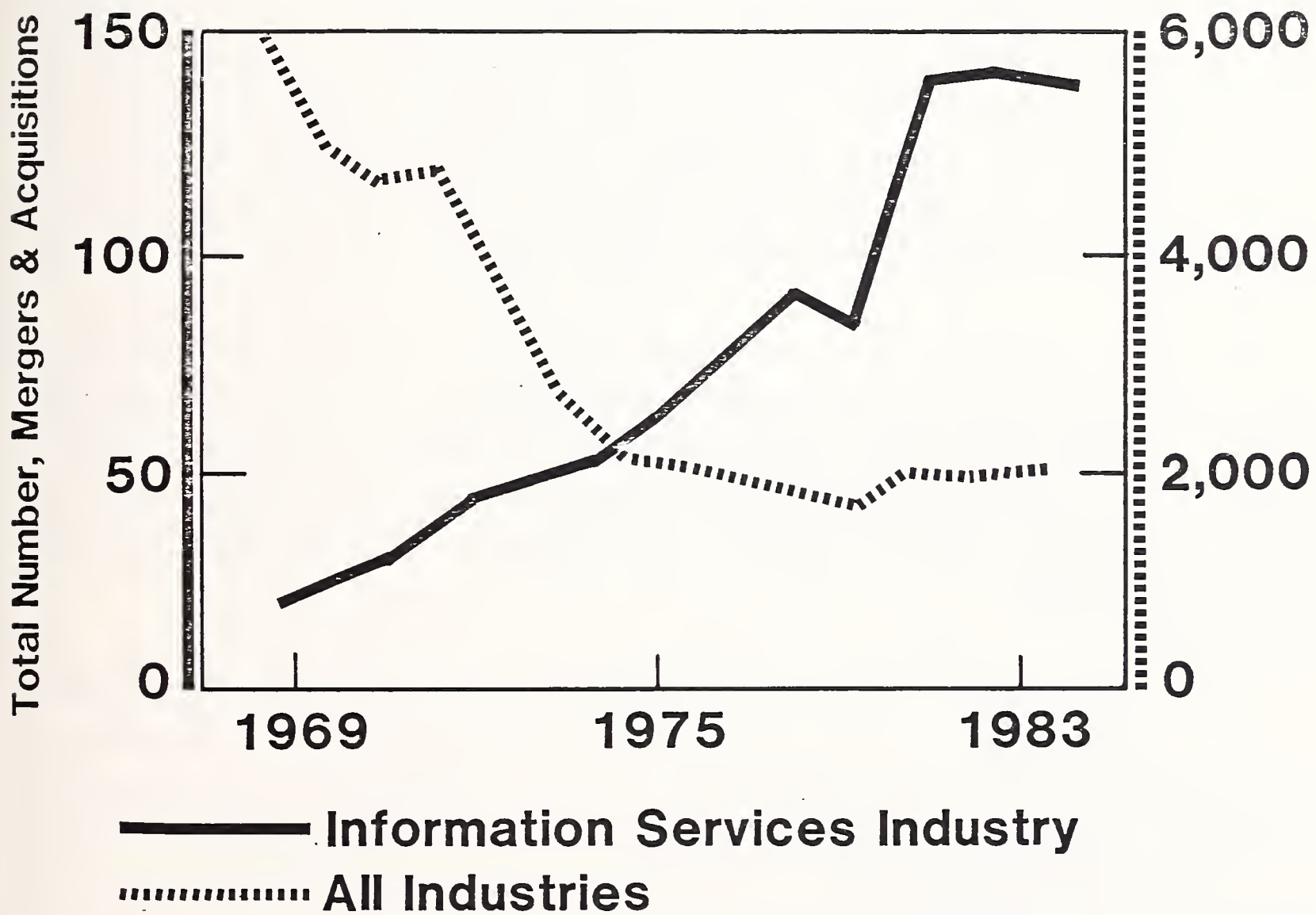
the peak year for information service acquisitions in terms of total value of the transactions accomplished and in the premium paid over market value; the P/E ratios for public information services companies have been running at twice the level of the S&P companies, but are now dropping steadily.

- Exhibit III-1 provides a graphic comparison of the role of acquisitions in the information services industry compared to the U.S. industry in general. A list of the information services acquisitions in 1984 is given in Appendix B.

B. SELF-ANALYSIS AND MARKET WINDOW DETERMINATION

- The essential preliminary to any serious acquisition strategy is self-analysis, which includes an objective evaluation of the present company's strengths and weaknesses in:
 - Management and management philosophy.
 - Products/services/technologies (range and quality).
 - Customer base (type and quality), market position, market share, overall competitive position.
 - General financial condition (balance sheet, leverageable assets, available loan financing, etc.).
 - In-house people skills (i.e., knowledge of specific markets and ability to adapt to others).
 - Current problems, relating to all of the above, e.g., targeted markets (rate of growth of revenues, market share, customer base growth, penetration rates), product lines (market coverage, competitiveness, technology, etc.).

MERGERS AND ACQUISITIONS



Source: Broadview Associates

- Obtaining the necessary level of objectivity is sometimes difficult to achieve without outside consulting help, even if management believes that it fully understands the marketplace. The key is to isolate constraints in, e.g., capacity (which may be production capacity-related, manpower capacity-related, or management capacity-related), time, financial, resources, etc.
- Another major consideration at this stage (and one which must be constantly updated during the acquisition phase until its impact is no longer likely to affect the outcome or success of an acquisition) is market window analysis. The greatest common denominator in failed/nonperforming acquisitions is the failure of the management of the acquiror to identify the timing constraints of the marketplace with respect to the acquisitions that are being considered.
- An example of this is how quickly the value of microcomputer software companies rose and fell with disastrous bottom-line results for the companies who acquired them, merely because little consideration was given to whether the momentary success of microcomputer software companies could be sustained given the trends in the marketplace away from their traditional clientele.
- This is another instance where an outside consultant can be of significant help, since he will be unaffected by the internal politics of the acquiror and more aware of the future trends of the marketplace as they relate to the targeted acquisition. Sadly, the number of companies that disregard the value of this window analysis seems to be rising rather than falling, and is not limited to outside investors (such as banks, financial institutions, industrial groups who have accurately identified the information services industry as an area of high growth), but includes the information services vendors themselves, who should know the vagaries of the market.
- A comprehensive analysis would include not only general market conditions (the economy per se, the strength of the main economic sectors served,

technology changes, competition in the information services market, etc.) but a detailed analysis of the short- and long-term trends of each of the above aspects as they apply to the targeted service sector.

C. PROSPECT PROFILE DEFINITION

- Once acquirors have established a clear picture of who they are, as well as of the nature of the market targeted and the window of opportunity that exists with respect to that market, a prospect profile is needed that encapsulates all of the critical aspects of the ideal target. The profile will need to be very detailed in that it allows homing in on five to ten prospects from a general list of 500 companies, for example.
- An example of a prospect profile is given in Exhibit III-2. It is concerned with defining the type of organization in parameters that are visible (i.e., freely available) as well as invisible (i.e., data that may not be available without cooperation from the target). The profile must address very practical issues such as "Is the company open to being purchased," which largely determine the type of approach that can be adopted with respect to management, the parent, and outside shareholders.
- The example shown is typical of a services vendor with an excess of \$50 million in revenues (the average ratio of revenues of acquiror to acquiree is 6:1). However, there are more and more instances of large companies that have little or no current involvement with the services market that are making significant acquisitions; in these cases the ratio does not apply.

EXHIBIT III-2

SAMPLE PROSPECT PROFILE

ITEM	EXAMPLE
Revenue Size	<ul style="list-style-type: none"> ● \$5 M to \$15M Maximum ● \$7M to \$20M Maximum if Some/All of the Hardware Systems are Retained ● Negligible Nondata Services (Or at Least Problem-Free)
Growth	<ul style="list-style-type: none"> ● Currently at 30% per Annum ● Historically Higher
Profit	<ul style="list-style-type: none"> ● Now, Immaterial (If Clear Potential) ● Future, Minimum 10% of Revenue
Service Business	<ul style="list-style-type: none"> ● Not People-Based, Not Project-Based ● Repeatable, Average Account of \$10K/Annum ● Compatible Users (In Sectors that we Currently Service or That are Related) ● Location(s) (Specified)
Hardware	<ul style="list-style-type: none"> ● Compatible/Same as Ours if Integration ● Any if Not Integrating, Prefer IBM ● Rented/Short Lease - not Owned/Long Lease

EXHIBIT III-2 (Cont.)

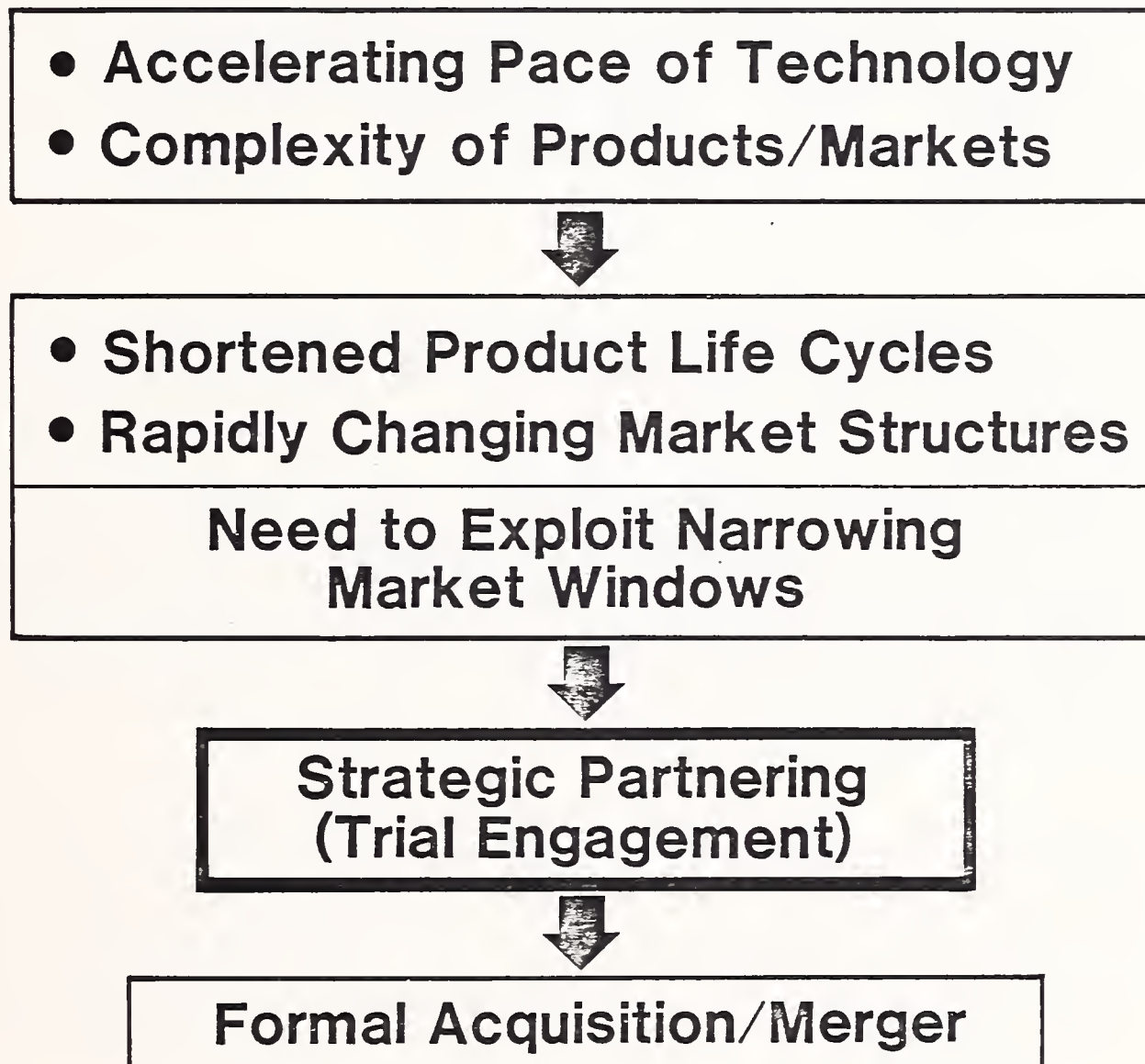
SAMPLE PROSPECT PROFILE

ITEM	EXAMPLE
Management/Staff	<ul style="list-style-type: none"> ● No/Few Shareholders, not Entrepreneurial ● If Integrating, Emphasis on Strong Middle Management; If not, Strong Period
Products/Services	<ul style="list-style-type: none"> ● Mature/Competitive ● Good Market Image, Name Brands ● Complimentary, Unless Ours is Weak
Ownership	<ul style="list-style-type: none"> ● Prefer Large/Majority Owner ● Fewer than 5 Small Owners ● No/Few/Unimportant Managers
Approach	<ul style="list-style-type: none"> ● No Commitment on Redundancies ● Stress Good Synergy with Us ● Guarantees to Customers ● Growth Opportunities for Management

D. STRATEGIC PARTNERING: AN ACQUISITION OPTION

- The rapidly accelerating pace of technology development, application, and obsolescence has reached the information services marketplace, affecting the ability of the vendors involved to obtain maximum benefit from the opportunities (see Exhibit III-3).
 - Shorter product life cycles translate into higher front-end costs for developing markets and shorter payback periods in which to recover the investments made.
 - The structure of each market is constantly changing, rearranging the mix of competitors' distribution channels, marketing/sales methods that are applicable, and the role of participants.
 - The higher complexity of products and markets means that the abilities of each vendor map less and less completely onto the target user requirements.
- The speed of development of new market opportunities and the increasing risk of formal acquisition makes strategic partnering an attractive alternative. It allows small and large companies alike to widen their strategic plans with regard to product/service spectrum, growth rate, and market coverage.
- This approach also allows formal acquisitions to proceed with less risk. Once two companies have proven that they can work together as strategic partners, showing a common strategy with clearly defined and complementary roles for each, then a more definitive and intimate relationship can be attempted. Certainly any weaknesses or incompatibilities will be rapidly made apparent. Strategic partnering magnifies each company's internal problems by mutual dependency on common business systems.

STRATEGIC PARTNERING: AN ACQUISITION OPTION



E. POTENTIAL IMPACT OF MAJOR ACQUISITION PROGRAMS ON THE
INFORMATION SERVICES MARKET, 1985-1990

- The problem faced by the most active and powerful acquirors is that as their own size increases, so does the ability of any one acquisition to contribute meaningfully to revenue or growth. It takes a medium-sized company to attract an ADP now, unless the company has a particularly valuable product, service, or contract to offer. For smaller companies the problem lies in continuing to generate cash commensurate with the demands for upgraded, expanded products and services for the markets they serve, while simultaneously funding the growth in business volume.
- Acquisitions do not, however, contribute to the growth of the overall envelope of information services industry revenues and profits; indeed, it can be argued that they detract from it in the short term due to the management energy required to rationalize the product lines and restructure the organization at all levels after an acquisition. In the long term, acquisition can be expected to have a positive effect on the industry by concentrating the active resources of the vendor community in the hands of those managers who have proved, by their survival, to be the fittest.
- In view of the foregoing, let us examine the likely impact of acquisitions on the growth of the information services market over the next five years. On the face of it, acquisitions eliminate weak vendors and concentrate assets and client bases in the hands of the strong vendors. But can this be substantiated?
- An analysis of the transactions that have taken place over the last two years suggests otherwise:
 - Acquisition does not often contribute to growth. If the preacquisition growth trends of the two parties to an acquisition are extrapolated separately and then added together, they very often exceed the actual performance of the merged operations.

- Even worse, there has been a spate of "failed" acquisitions, where the acquired operation has literally "died"; whether this was due to the original owners (having made a success of the creation) cashing in and losing interest or mismanagement by the new owners is unimportant--the result is the same.
- The famed notion of "synergy" is an elusive benefit. There is evidence to suggest that earlier concepts of synergistic companies are overly simplistic and that synergy needs to be sought at deeper levels of the operations.

IV INFORMATION SERVICES MARKETPLACE

IV INFORMATION SERVICES MARKETPLACE

- The companies that comprise the information services industry continued their growth in 1984. In this section of the report, this growth and the factors that contributed to it are explored.

A. OVERVIEW

- Over 7,400 companies comprised the information services industry in 1984, and these companies generated \$40.5 billion in U.S. noncaptive revenue from computer software and services, as shown in greater detail in Exhibit IV-1.
 - Processing services companies led the industry in U.S. noncaptive revenue (\$17.0 billion) and number of employees. However, the increasing number of companies establishing their own in-house processing service and using microcomputers contributed to a revenue growth rate below that of the industry rate.
 - Software products companies, the second largest segment in terms of revenue within the year, continued their fast pace, growing at a rate of 33%, after growth rates of 39% in 1982 and 41% in 1981.
 - Professional services companies, the third largest sector in number of companies and revenue, grew below the industry average at 20%.

EXHIBIT IV-1

KEY INFORMATION SERVICES INDUSTRY STATISTICS

TYPE OF COMPANY	NUMBER OF COMPANIES	NONCAPTIVE U.S. REVENUE			EMPLOYEES
		1983 (\$ Billions)	1984 (\$ Billions)	GROWTH (Percent)	NUMBER (Thousands)
Processing Services	2,150	\$14.4	\$17.0	18%	233
Software Products	2,500	7.5	10.0	33	135
Professional Services	1,450	6.5	7.8	20	111
Turnkey Systems	1,300	4.4	5.7	29	63
Total All Types	7,400	\$32.9	\$40.5	23%	542

- Turnkey systems companies continued their rapid growth.

B. REVENUE DISTRIBUTION BY TYPE OF COMPANY

- When classified by their major source of revenue, interesting changes in percent of total revenues appear, as shown in Exhibit IV-2.
 - While all four types of companies grew in 1984, software products companies grew at rates faster than the industry average and, as a result, took market share from processing and professional services companies. Processing services companies now comprise approximately 42% of total industry revenues, down from 50% three years ago.
 - Software products companies, on the other hand, enhanced their industry position and have passed professional services companies in market share.
 - Professional services companies declined 1% to a 19% share, while turnkey systems companies advanced their position to 14% of industry revenue.

C. REVENUE DISTRIBUTION BY MODE OF SERVICE

- By mode of service, without regard for the type of company offering the service, processing services continued to hold a commanding market share at 37% but did lose share to the other services, as shown in Exhibit IV-3. Software products increased in market share from 23% in 1983 to 26% in 1984.

EXHIBIT IV-2

REVENUE DISTRIBUTION BY TYPE OF COMPANY
(Main Source of Revenue Classifies all Revenue)

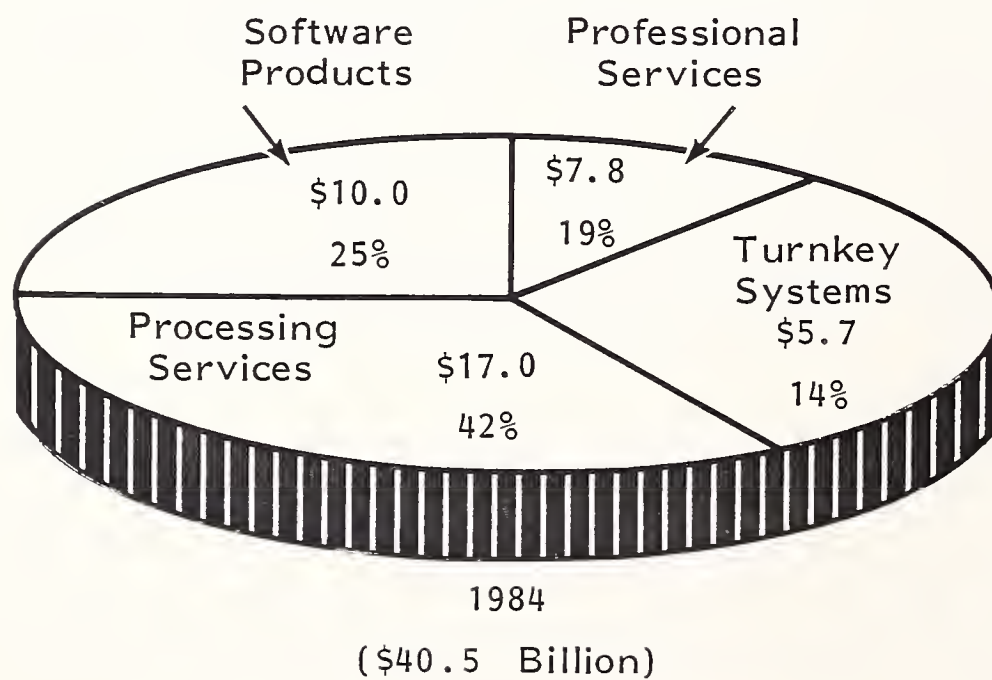
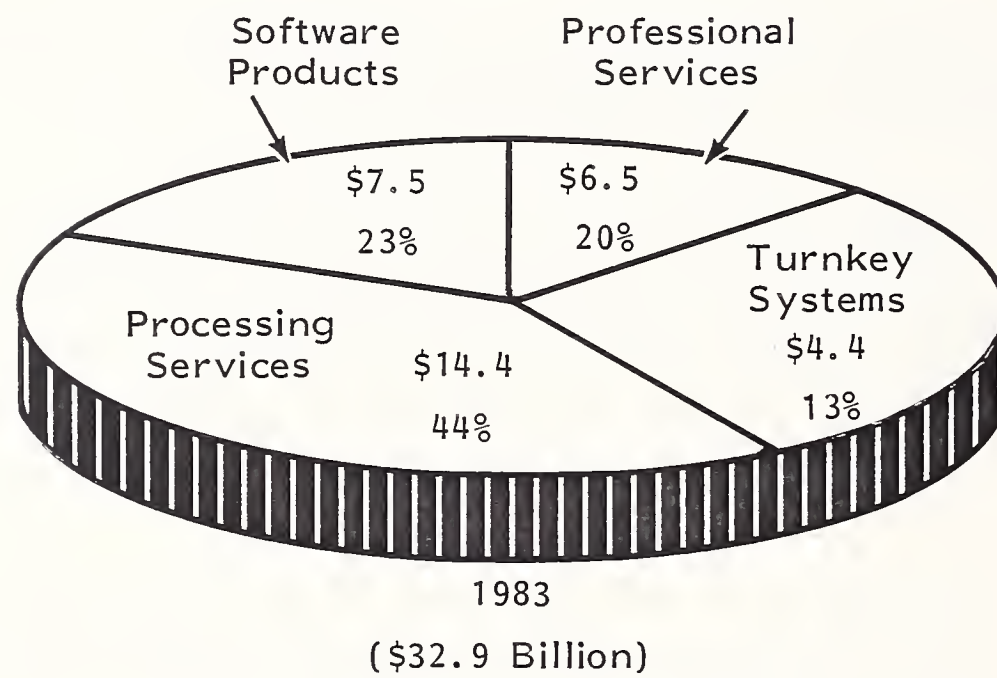
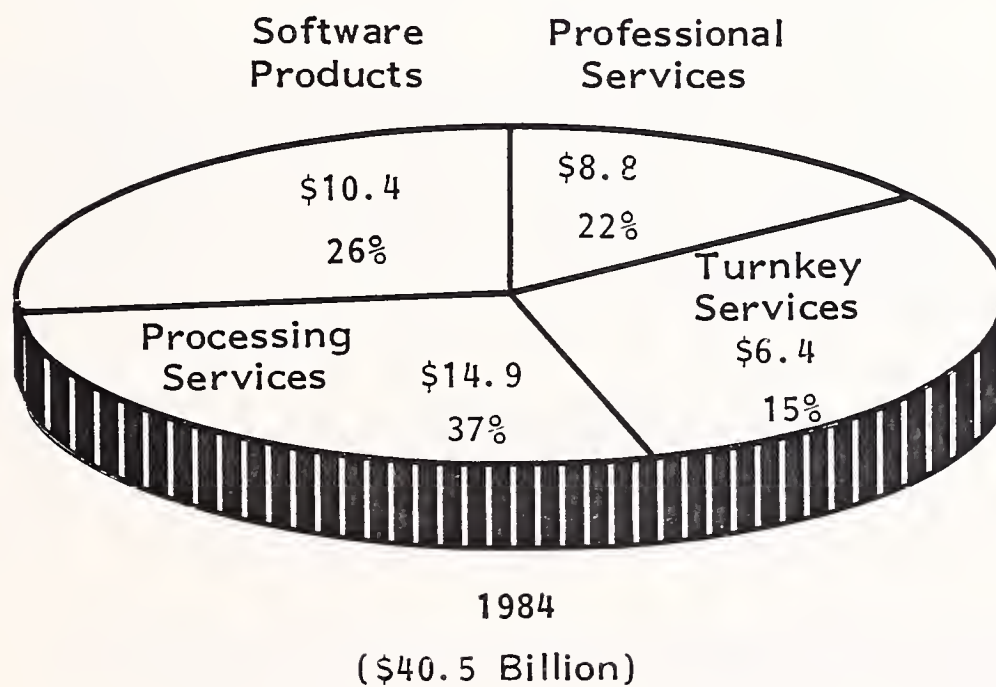
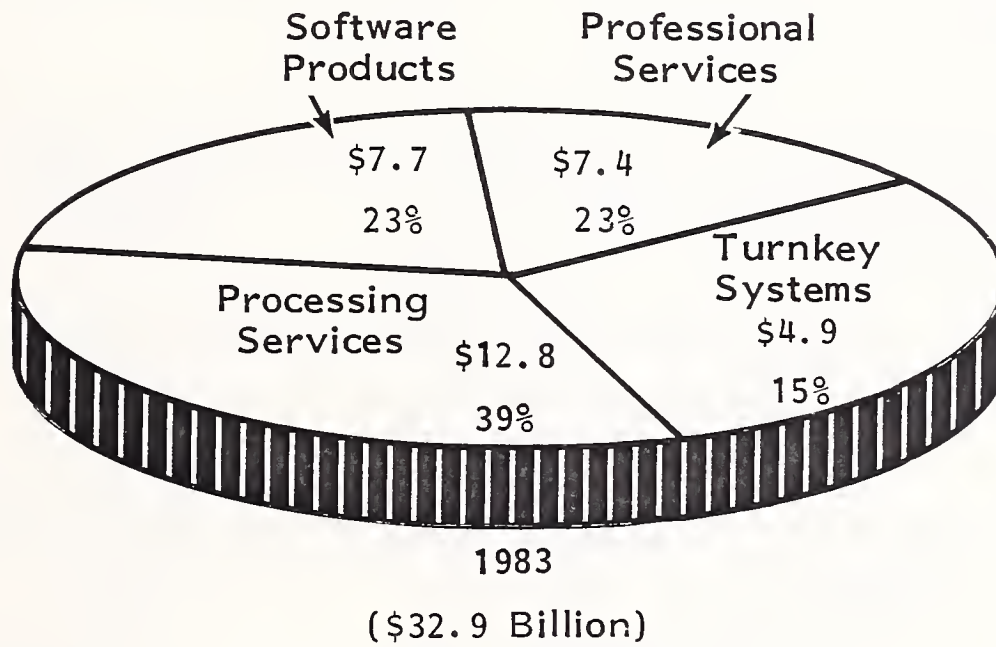


EXHIBIT IV-3

REVENUE DISTRIBUTION BY MODE OF SERVICE



- The proportion of the industry revenue captured by companies of various sizes, as classified by their total U.S. noncaptive revenue, indicated a modest change in industry concentration. Large companies, although only 351 in number, comprise approximately 60% of the industry revenue. Exhibit IV-4 and Exhibit IV-5 depict market growth and market share by size and type of company.
- The growth of larger companies has slowed in recent years as their products and markets have matured.
 - Software products companies, with a 31% growth rate remain the fastest, followed by turnkey systems at 25%.
 - Processing and professional services are down to 17% and 15%, respectively.
- The 40% share held by the numerous smaller companies with their overall 27% growth rate seems to be driving the industry.
 - Under \$10 million companies of all types except processing services reported growth rates in excess of 25%. Software companies, in particular, held up the industry's software products growth with an astonishing 38% rate.
 - Only smaller processing companies, at 20%, realized growth below the industry average.

D. REVENUE AND GROWTH RATE BY MODE OF SERVICE

- The change in product mix for the four types of companies was as follows:

EXHIBIT IV-4

REVENUE AND GROWTH RATE OF INFORMATION SERVICES
BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY *SIZE	REVENUE 1983	REVENUE 1984	GROWTH 1983-1984 (Percent)
Processing Services			
< \$10	\$4,934	\$5,900	20%
≥ \$10	\$9,469	\$11,074	17%
All Processing	\$14,403	\$16,974	18%
Software Products			
< \$10	\$2,649	\$3,659	38%
≥ \$10	\$4,887	\$6,378	31%
All Software	\$7,536	\$10,037	33%
Professional Services			
< \$10	\$2,402	\$3,059	27%
≥ \$10	\$4,108	\$4,733	15%
All Professional	\$6,510	\$7,792	20%
Turnkey Systems			
< \$10	\$2,601	\$3,409	31%
≥ \$10	\$1,819	\$2,274	25%
All Turnkey	\$4,420	\$5,683	29%
All Types			
< \$10	\$12,586	\$16,027	27%
≥ \$10	\$20,283	\$24,459	21%
All Types	\$32,869	\$40,486	23%

EXHIBIT IV-5

MARKET SHARE BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY *SIZE	MARKET SHARE	
	1983	1984
Processing Services		
< \$10	17%	15%
≥ \$10	27%	27%
All Processing	44%	42%
Software Products		
< \$10	8%	9%
≥ \$10	15%	16%
All Software	23%	25%
Professional Services		
< \$10	7%	8%
≥ \$10	13%	12%
All Professional	20%	19%
Turnkey Systems		
< \$10	8%	8%
≥ \$10	7%	6%
All Turnkey	15%	14%
All Types		
< \$10	39%	40%
≥ \$10	61%	60%
All Types	100%	100%

- Processing services companies experienced strong revenue growth in software products and professional services. Growth in turnkey systems was also above the industry average at 26%. This provides a strong indication that processing services companies intend to combat the move to in-house processing by providing their own "in-house" alternative.
 - Software companies had major revenue increases in professional services, turnkey systems, and processing services, although the latter increase was on a small base of revenue.
 - As expected, professional service companies continued their strong growth in software products revenue and turnkey systems. Again, the turnkey revenue growth was on a small base.
 - Turnkey systems companies increased by 32% in professional services and 54% in software products, while processing services revenue growth was only 6%.
- Exhibit IV-6 provides the revenue and market share data.
 - Productivity rates provide a gross indication both of the extent of the "people intensity" of each business and the extent to which companies are adding or subtracting from staff in response to business conditions, as shown in Exhibit IV-7.
- By type of service, software products companies were the only type of company to decrease in productivity rates. An increase of over 50% in the employee count in companies with revenue over \$10 million coupled with a slower growth rate contributed to this decline.
 - The result of this was a drop in profitability when growth slowed.

EXHIBIT IV-6

REVENUE AND GROWTH RATES BY MODE OF SERVICE

TYPE OF COMPANY	MODE OF SERVICE (REVENUE IN \$millions)				TOTAL BY COMPANY
	PROCESSING SERVICES	SOFTWARE PRODUCTS	PROFESSIONAL SERVICES	TURNKEY SYSTEMS	
PROCESSING SERVICES 1983 REVENUE 1984 REVENUE GROWTH RATE (%)	\$12,021 \$13,941 16%	\$686 \$890 30%	\$1,002 \$1,271 27%	\$694 \$872 26%	\$14,403 \$16,974 18%
SOFTWARE PRODUCTS 1983 REVENUE 1984 REVENUE GROWTH RATE (%)	\$130 \$183 41%	\$6,468 \$8,615 33%	\$794 \$1,046 32%	\$144 \$193 34%	\$7,536 \$10,037 33%
PROFESSIONAL SERVICES 1983 REVENUE 1984 REVENUE GROWTH RATE (%)	\$493 \$578 17%	\$486 \$664 37%	\$5,377 \$6,283 17%	\$154 \$267 73%	\$6,510 \$7,792 20%
TURNKEY SYSTEMS 1983 REVENUE 1984 REVENUE GROWTH RATE (%)	\$181 \$191 6%	\$129 \$189 47%	\$193 \$255 32%	\$3,917 \$5,048 29%	\$4,420 \$5,683 29%
TOTAL BY MODE 1983 REVENUE 1984 REVENUE GROWTH RATE (%)	\$12,825 \$14,893 16%	\$7,769 \$10,358 33%	\$7,366 \$8,855 20%	\$4,909 \$6,380 30%	\$32,869 \$40,486 23%

EXHIBIT IV-7

PRODUCTIVITY RATES BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY o SIZE (\$ Millions)	AVERAGE REVENUE PER EMPLOYEE		
	1983 (\$ Thousands)	1984 (\$ Thousands)	Growth (Percent)
Processing Services			
• < \$10	\$50	\$56	11%
• ≥ \$10	84	89	6
All Processing	\$68	\$74	8%
Software Products			
• < \$10	\$72	\$82	13%
• ≥ \$10	89	72	-20
All Software	\$80	\$76	-5%
Professional Services			
• < \$10	\$69	\$83	21%
• ≥ \$10	63	64	1
All Professional	\$65	\$70	8%
Turnkey Systems			
• < \$10	\$76	\$90	19%
• ≥ \$10	83	90	9
All Turnkey Systems	\$79	\$78	14%
All Types	\$73	\$78	7%

- The other type of companies indicated similar trends with larger productivity gains by the smaller companies offset by the smaller gains of larger companies.

E. TOP TWENTY-FIVE SALES AND GROWTH STARS

- The top 25 information services companies represent less than 1% of the industry membership but captured 27% of the 1983 and 1984 industry revenue.
- IBM has targeted three information services markets--software products (program products), professional services, and processing services (information network). IBM's progress in both instances has been dramatic, but INPUT believes the best is yet to come. IBM's opportunity for growth in software products is gigantic and represents one of the best long-term potential markets that IBM has yet to fully exploit.
- ADP, after excellent revenue and net income growth in the 16-18% per annum range has finally begun to slow down. Nevertheless, ADP will become the first independent services vendor to reach \$1 billion in revenues and will accomplish this in 1985. ADP is the archetype of the hard-driving, goal-oriented company with excellent top management.
- Control Data is gradually losing its preeminent role in the information services market and has been unable to grow at a rate comparable with its peers. Nevertheless, CDC's Cybernet services had excellent first and second quarters in 1985 to begin the year on a high note. This was primarily due to strong demand in engineering/scientific processing services.
- EDS made substantial progress in 1984 growing at 22%. GM offers EDS a test bed for the development of new skills and services in process control, CAE,

and network design/management. In the years to come this will make EDS more formidable than ever.

- Exhibit IV-8 shows the 1984 ranking of the top 25 sales leaders and Exhibit IV-9 shows the 1984 ranking of the top 25 growth leaders from companies with revenues over \$10 million.

EXHIBIT IV-8

TOP TWENTY-FIVE SALES STARS
U.S. MARKET, NON-CAPTIVE REVENUE 1984

RANK 1984	RANK 1983	
1	1	International Business Machines (IBM)
2	3	Automatic Data Processing
3	2	Control Data Corporation
4	4	Electronic Data Systems
5	5	Computer Sciences Corporation
6	8	McDonnell Douglas Information Services
7	6	Burroughs Corporation
8	7	General Electric Information Services
9	13	NCR Data Services Division
10	12	Computervision Corporation
11	9	Arthur Anderson & Company
12	10	Digital Equipment Corporation
13	17	Intergraph Corporation
14	11	Dun & Bradstreet - Business Info. Sys.
15	14	Shared Medical Systems
16	15	McGraw-Hill, Inc.
17	16	Mitre Corporation
18	19	Boeing Computer Services
19	21	First Data Resources, Inc.
20	23	Quotron Systems, Inc.
21	22	Equifax, Inc.
22	24	Continental Telecom, Inc.
23	18	Geophysical Services, Inc.
24	20	Planning Research Corporation
25	25	Informatics General

EXHIBIT IV-9

TOP TWENTY-FIVE GROWTH STARS U.S. MARKET, 1984

RANK	
1	Sycom
2	AMI
3	3COM Corporation
4	Daisy Systems
5	Comp-U-Card International, Inc.
6	Litton Computer Services
7	Safeguard Scientific, Inc.
8	Borland
9	Infocel Incorporated
10	Lotus Development Corporation
11	Oracle Corporation
12	Microsoft Corp.
13	GMD Systems International, Inc.
14	Modular Information Systems, Inc.
15	Software Publishing Corp.
16	Symbolics
17	Ashton-Tate
18	Butler Computer Graphics
19	DBMS, Inc.
20	Morino Associates, Inc.
21	STSC
22	Walker Interactive Products
23	Medical Information Technology
24	Display Data
25	Advanced Systems Applications

V PUBLIC COMPANY ANALYSIS

V PUBLIC COMPANY ANALYSIS

A. CENSUS OF PUBLIC COMPANIES BY SERVICE MODE

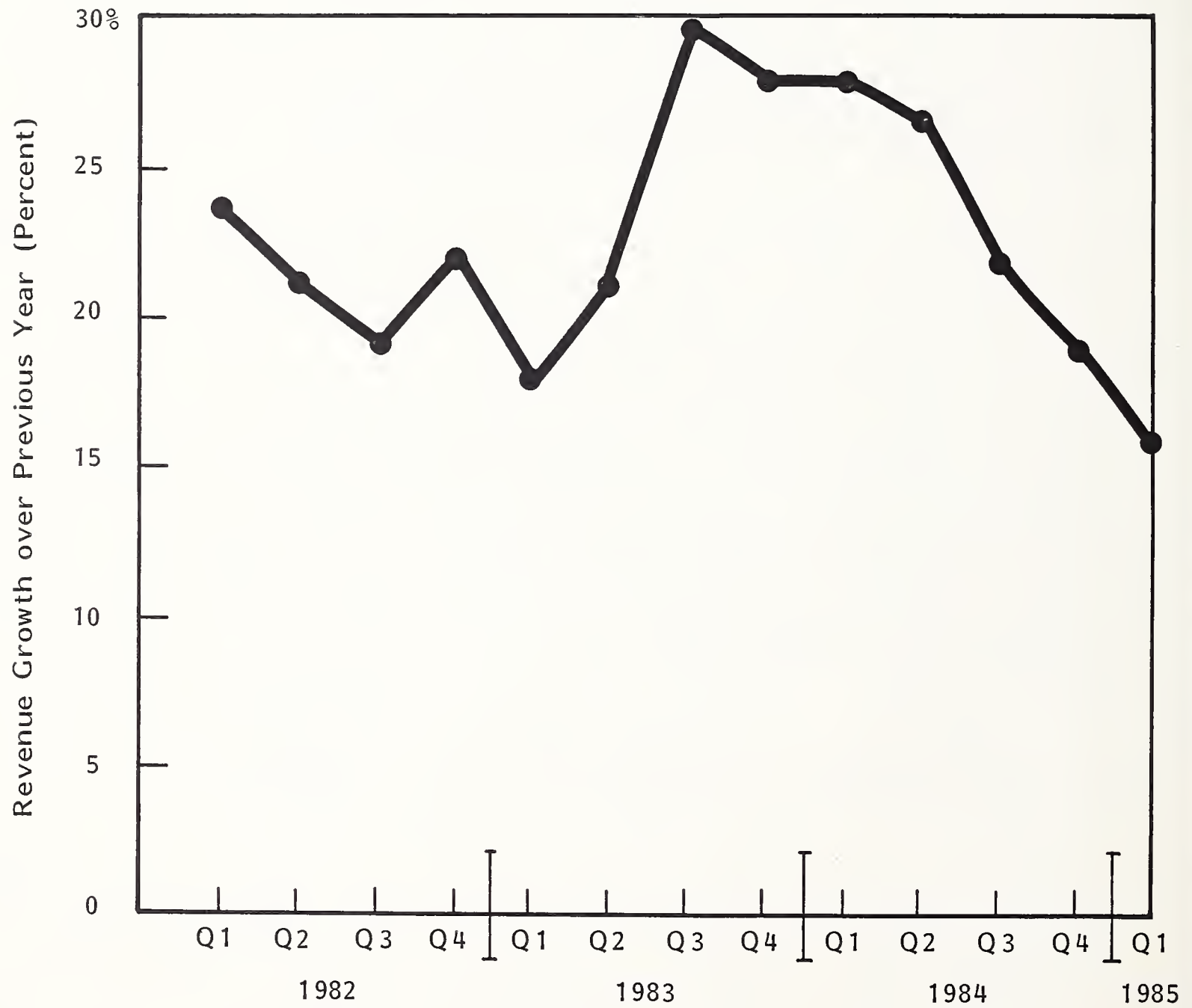
- INPUT's census of public information services vendors includes 101 companies:
 - Processing services vendors - 32.
 - Professional services vendors - 25.
 - Software products vendors - 26.
 - Turnkey systems vendors - 18.

B. REVENUE AND NET INCOME PERFORMANCE, 1982-1984

- As a group the public information services companies that INPUT tracked had a good year in 1984 with revenue growing most of the year except for the fourth quarter. Revenue growth averaged 24% while net income averaged 21%. The 1984 quarterly performance shows the real trends, however, with a gradually worsening picture developing as the year wore on (see Exhibit V-1).

EXHIBIT V-1

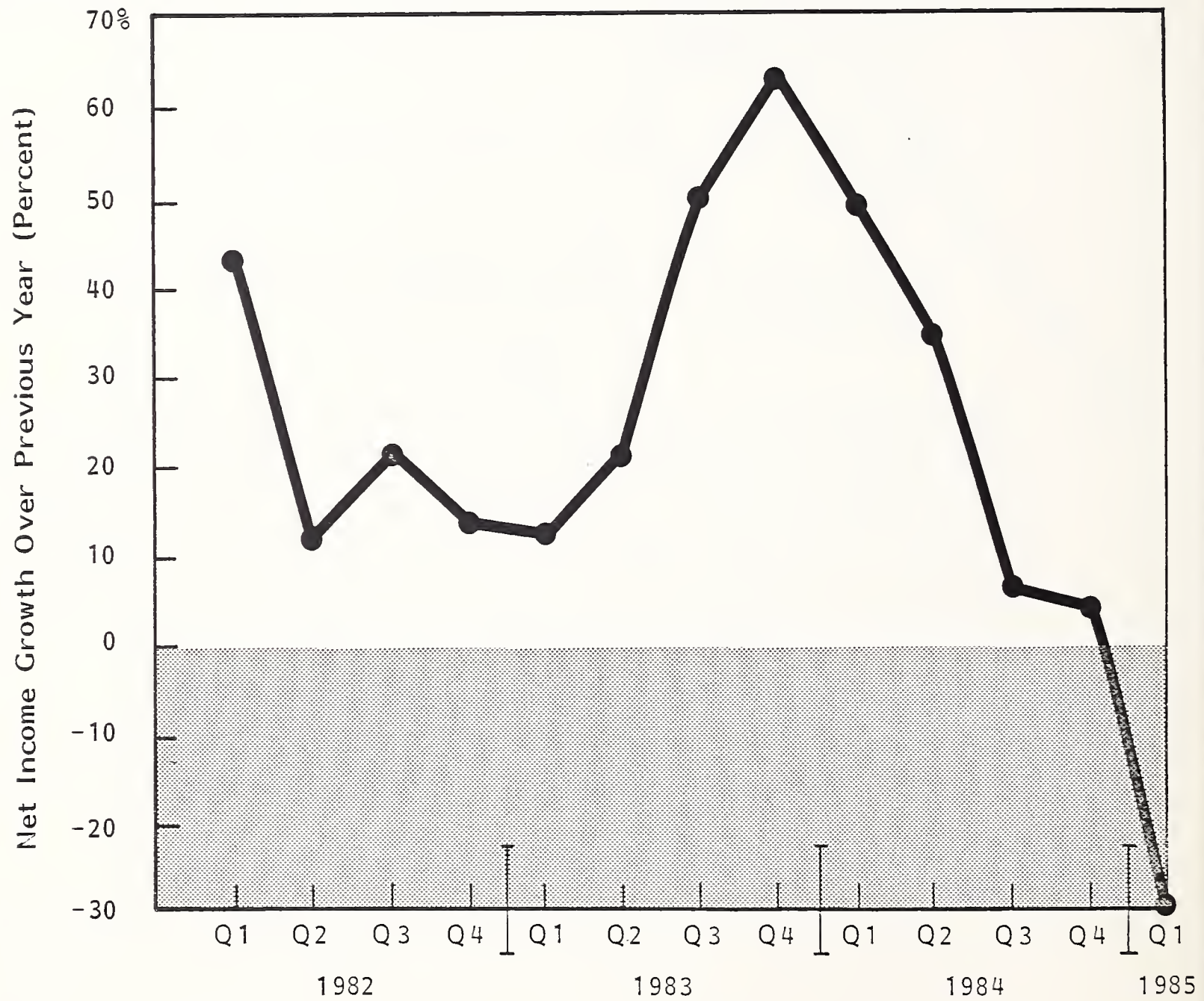
PUBLIC INFORMATION SERVICES VENDOR
REVENUE GROWTH, 1982-1985



- The 100 public information services vendors represent, as a group, approximately 23% of total 1984 information services industry revenues and is, therefore, a representative cross-section of the entire industry.
 - Processing services vendors included represent approximately 20% of the total market.
 - Public professional services companies included 31% of the total market in their sector.
 - Turnkey systems vendors included represent 38% of total sector revenues.
 - Public software products vendors represent 17% of the total software products market.
- Feeling the impact of the economic slowdown (but not nearly as much as for other industries), information services revenue growth cycled down to a low of 18% in the first quarter of 1983, rapidly rising with economic expansion to peak with nearly 30% annually by the third quarter. Revenue growth remained high in the first two quarters of 1984 but retreated to just below 20% annually by the end of the year.
- Net income growth of the public information services companies, as a group, runs in the same cyclical pattern as does revenue but with much wider swings, as shown in see Exhibit V-2.
 - With continued deterioration in processing vendor income growth coupled with price competition and selective market saturation for software products, signaling the pending shakeout, income growth bottomed out at 7% annually in the third quarter of 1984.

EXHIBIT V-2

PUBLIC INFORMATION SERVICES VENDORS
NET INCOME GROWTH, 1982-1985



- Buoyed by economic expansion and high leverage afforded in the software products and turnkey systems, revenue growth accelerated to peak at over 100% annually at the end of 1983.
- Holding onto hard-to-replace technical and marketing skills in falling markets and other factors including price/performance of mini/micro-computers as compared to remote processing delivery, processing services vendors saw income growth fall from 43% in the first quarter of 1982 to 13% annual growth a year later.

C. CASE STUDY ANALYSIS OF SELECTED SUCCESS STORIES

- This section analyzes public information services firms which have demonstrated above average revenue and net income growth for the last nine months of 1984 compared to the same period in 1983.
- To qualify, the company must have both revenue and net income growth greater than 20% annually and have had positive revenue and net income growth for April through December 1984 over the year-earlier period--that is, companies experiencing truly significant expansion in both revenue and net income. INPUT has called such companies "growth stars."

I. PROCESSING SERVICES

- Specialization in vertical markets is the common thread among the four growth stars of the public processing service firms shown in Exhibit V-3.
- With average revenue and net income growth rates exceeding 30%, the growth stars demonstrate that with effective strategies the remote computing services market is alive and well.

EXHIBIT V-3

PUBLIC PROCESSING SERVICES "GROWTH STARS"

FIRM	GROWTH (Percent) *	
	REVENUE	NET INCOME
TSR, Inc.	23%	105%
Telerate	49	28
Cycare	40	32
Numerax	27	30

*April thru December 1984 versus April thru December 1983

a. TSR, Inc.

- Shifting from its traditional market of supplying timesharing resources, TSR, Inc. derives over 30% of its revenue from consulting services and another 25% through data base services.
 - Focusing on the financial services marketplace, TSR's latest contract is to manage American Express International Banking Corporation's information processing.

b. Telerate

- Operating exclusively in financial markets, Telerate offers financial on-line data base services through more than 12,000 specialized Telerate terminals worldwide.
 - In addition to its own economic and financial data, Telerate provides on-line distribution of money market information provided by other vendors, information which has high value to Telerate's subscribers. The on-line data base offerings exceed 25,000 display screens or "pages."
 - Telerate will be leveraging its data base offerings through arrangements with International Market Net (IMNET) in joint venture between IBM and Merrill Lynch offering financial data, office automation, and communication services to the banking and finance industry.

c. Cycare

- Concentrating on a niche in medical markets, Cycare provides information systems and services to group practices, HMOs, and medical centers. By avoiding larger hospital information systems and services, Cycare has been able to become a dominant vendor of both processing and turnkey systems in the ambulatory care marketplace.

- In addition to internal growth, Cycare is actively acquiring its regional competitors such as DX and HRA, both specializing in services to physicians in New York and the medical division of Endata, Inc., providing information services to physicians in Florida.
- Cycare is in the process of being acquired by Baxter Tavenol Laboratories, Inc.

d. Numerax

- Specializing in transportation information services for carriers and shippers, Numerax, Inc. leverages its over 30 million tariff item-related data base for specialized services.
 - Numerax has greatly benefitted from transportation industry deregulation which has greatly increased the need for on-line data base services.
 - Utilizing IBM PC technology, Numerax has developed a concept of a client traffic workstation. Services offered through the workstation include electronic mail, handling private tariff data bases, and shipper/carrier "brokerage" offerings/needs transactions.

2. SOFTWARE PRODUCTS

a. Lotus Development Corporation

- Lotus Development Corporation continues to lead the group of growth stars shown in Exhibit V-4. Lotus's premiere success has been due to a combination of effective software products, outstanding marketing skills, and an extensive program of advertising, computer support, and education and training.

EXHIBIT V-4

PUBLIC SOFTWARE PRODUCTS "GROWTH STARS"

FIRM	GROWTH (Percent) *	
	REVENUE	NET INCOME
Lotus Development Corp.	167%	116%
The Continuum Company	45	131
Cullinet Software, Inc.	55	53
Software AG	34	63

*April thru December 1984 versus April thru December 1983

- Product and market expansion is being achieved in a two-pronged approach, providing products for a wide variety of personal computers including the MacIntosh and Apricot (U.K.), and sponsoring development of new products in startup companies formed by former employees.
- With over 500,000 copies of its Lotus and Symphony products installed, Lotus is actively fighting "gray" market resellers with an ID plan and unauthorized duplication with corporate lawsuits.

b. Continuum

- A dominant supplier of software products to the life and health insurance industry, The Continuum Company (TCO) has achieved both high revenue and income growth by balancing software license fees, processing, and professional services.
 - Over 75 clients subscribe to its Comprehensive User Product Services (CUPS) sharing the cost of development and maintenance of insurance systems.
 - Recent acquisition of Informatics' Equimatics Insurance Division further consolidates TCO's market position and accelerated growth.

c. Cullinet Software

- Combining excellent DBMS technology with top notch sales, marketing, and customer support, Cullinet Software continues its surge of high revenue and net income growth.
 - Following its strategy to become a single-source software supplier, system (DBMS) through application, mainframe through micro, Cullinet is taking both the acquisition route (Bob White Software) and the strategic partnering routes (Lotus) for market expansion.

- Cullinet has obtained invaluable implementation support allies through strategic partnering with Electronic Data Systems (EDS) and Computer Task Group (CTG).

d. Software AG

- Bolstered by the new CEO and a strengthened marketing organization plus an expanded product line, Software AG has emerged as a growth star.
- Expanding its product offerings through its existing client base, including its micro-mainframe Natural/Connection link and IBM-PC, XT-370, DBMS, and through new clients with DEC-backed DBMS software, Software AG's products offer the attractive features of user friendliness coupled with high data and program security.

3. PROFESSIONAL SERVICES

- Net income growth for public professional services firms shown in Exhibit V-5 greatly exceeds already healthy revenue growth for the growth stars as market demand took the slack out of staff availability.

a. Keane, Inc.

- Concentrating in the medical and manufacturing vertical markets, Keane, Inc. is shifting corporate strategy from primarily professional services to offering software products and turnkey systems.
- Keane leverages its KeyMed systems through IBM VAR and Wang ISO market agreements, accelerating income growth.
- In addition to offering factory information software, Keane targets "value-added" project management professional services to the manufacturing sector.

EXHIBIT V-5

PUBLIC PROFESSIONAL SERVICES "GROWTH STARS"

FIRM	GROWTH (Percent) *	
	REVENUE	NET INCOME
Keane, Inc.	56%	450%
Intermetrics	31	435
Computer Task Group	53	52
Bolt Beranek and Newman (BBN)	26	70

*April thru December 1984 versus April thru December 1983

b. Intermetrics

- Applying its professional services including its expertise in ADA, Pascal, and "C" languages in a rapidly rising federal government defense industry marketplace, coupled with strategically selected niches in commercial software product and turnkey systems markets, Intermetrics, Inc. had a banner 1984.
 - Successfully transferring technology from the government marketplace, Intermetrics' micro-code compilers are widely used by both hardware vendors and system houses throughout the commercial marketplace.
 - Intermetrics products are also finding wide acceptance in microprocessor imbedded monitoring and machine controllers, a niche in the rapidly growing Computer Integrated Manufacturing (CIM) marketplace.
 - Investment by AT&T in, and joint marketing agreement with, Intermetrics for U.S. federal government markets are likely to support Intermetrics' high growth.

c. Computer Task Group

- Using a combined strategy of both growth through acquisition and internally, Computer Task Group (CTG) has become a company providing professional services to Fortune 1000 companies nationwide.
 - Combining top executive management, marketing, effective product management, and outstanding professional education and training, CTG effectively leverages the value-added skills of its professional staff.

- Working with Cullinet Software, Inc., CTG has become a leading vendor of DBMS implementation services.
- Focusing on finance and manufacturing markets, including process control, CTG provides multi-site services to over 30 of the largest 50 Fortune 500/50 industrial/financial corporations.

d. BBN

- Implementing dual strategies of balancing professional services with increased software product and turnkey systems offerings and increased participation in commercial as contrasted to federal markets, Bolt, Beranek and Newman, Inc.'s (BBN) 1984 revenues exceeded \$100 million. BBN's revenues were equally divided between consulting and products. Commercial revenues exceeded 40% of total revenues.
- Specializing in communication products, BBN is developing networks for Wang Laboratories, Michigan Bell, and MasterCard, Inc. in commercial markets.
- Capitalizing on technology transfer, BBN has established a software products subsidiary. Software products under development include expert systems, network management, and speech recognition.

4. TURNKEY SYSTEMS

- Becoming highly successful in strategically selected vertical markets characterizes the public turnkey systems growth stars shown in Exhibit V-6.

a. Daisy Systems Corporation

- Currently the leading vendor in computer-aided engineering (CAE) for integrated circuits and electronic circuit boards, Daisy Systems Corporation's products improve the productivity of electrical design engineers.

EXHIBIT V-6

PUBLIC TURNKEY SYSTEMS "GROWTH STARS"

FIRM	GROWTH (Percent) *	
	REVENUE	NET INCOME
Daisy Systems	158%	114%
Intergraph	64	111
Gerber Scientific	32	95
Avante-Garde Computing, Inc.	48	40

*April thru December 1984 versus April thru December 1983

- Daisy System's continued revenue and net income growth is based on the corporate strategies of picking a large and expanding market, becoming a market leader, driving the market through product innovation, and providing an effective set of marketing and support services to sustain and expand the customer base.
- Daisy Systems targets its integrated CAE turnkey system to hardware vendors, systems houses, and semiconductor vendors.
- In addition to integrating its software with CAE workstations in a VAR arrangement with IBM, Daisy Systems is offering a low-end CAE product operating on the IBM PC/AT.

b. Intergraph

- Focusing on the civil engineering and mechanical design segment of the computer-aided design (CAD) marketplace, Intergraph Corporation has achieved revenue and net income growth greater than even the industry leaders--IBM and Computervision.
 - Intergraph integrates its 32-bit workstations with DEC VAX minicomputers and an ever increasing array of data base management and design software to sustain and expand the customer base in presently targeted markets.
 - Intergraph has recently developed a workstation incorporating National Semiconductor's 32032 microprocessor which in addition to running Intergraph's CAD software can run under UNIX or under M-DOS with interfacing to IBM mainframes.
 - Investing in Tangent Systems Corporation, Intergraph can be expected to expand into the CAE marketplace.

c. Gerber Scientific

- Focusing market strategy on supplying turnkey systems to computer-aided manufacturing (CAM) markets, Gerber Scientific, Inc.'s growth star status results from both internal growth and selected acquisitions. 1984 acquisitions included EOCOM Electronic Systems manufacturing laser-based imaging devices and R.P.M. Systems manufacturing computer-controlled handling systems.
 - Benefitting from the economic expansion and increased defense spending, Gerber has supplied automated systems to a wide range of manufacturing industries including aerospace, apparel, automotive, electronics, construction, and printing.

d. Avant-Guard Computing, Inc.

- Avant-Guard Computing, Inc. has found its market niche in supplying turnkey systems for communications network management.
 - Avant-Guard integrates proprietary line monitoring units with Perkin-Elmer 3200 series minicomputers and an increasing array of proprietary software. Avant-Guard has expanded product offerings to include network management, network reconfiguration, and network security.
 - Communications deregulation will shift network responsibility from AT&T to users and increase cost consciousness among network managers, all accelerating demand for Avant-Guard's products and services.

VI PROCESSING SERVICES SECTOR ANALYSIS

VI PROCESSING SERVICES SECTOR ANALYSIS

A. PROCESSING SERVICES MARKET, 1984

- The processing services market was valued at \$14.89 billion in 1984 and grew 16%. This represents a 37% share of the information services marketplace compared to 39% in 1983.
- Processing services vendors have become steadily more active in other service areas (i.e., software products, professional services, and turnkey systems) and now obtain 18% of their total revenue from these non-processing services activities.
- The source of processing services companies' revenue in 1983 and 1984 is shown in Exhibit VI-1 and clearly shows that an increasing share of the processing services companies' growth comes from other activities. Software products is the favored target, but all three of the other activities grew above 25% in 1984, well above the growth of the main body of revenue (processing services).

EXHIBIT VI-1

PROCESSING SERVICES COMPANIES'
REVENUE AND GROWTH RATES BY MODE OF SERVICE

PROCESSING SERVICES REVENUE (\$ Millions/Year)	REVENUE SOURCE BY MODE OF SERVICE				Total by Company
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1983	\$12.02	\$0.69	\$1.00	\$0.69	\$14.40
1984	13.94	0.89	1.27	0.87	16.97
Growth Rate (Percent)	16%	30%	27%	26%	18%
Percent of Total 1984 Market by Type of Vendor	82%	5%	8%	5%	100%

B. DISTRIBUTION OF PROCESSING SERVICES REVENUE

- The distribution of processing services revenue by submode is shown in Exhibit VI-2.
 - Remote computing services companies dominate the group, most of which have over \$10 million in annual sales.
 - As a group, companies over \$10 million in annual sales captured two-thirds of the market in 1984.
 - Processing facilities management companies are now almost exclusively in the over \$10 million bracket.

C. PUBLIC PROCESSING SERVICES COMPANIES

- Exhibit VI-3 shows the last three years' trend in revenue and net income growth (or contraction) for the sample and shows that 1984 appeared to continue the pattern of 1982 and 1983. However, after two strong quarters the third quarter showed a sudden slowing in growth which continued in the fourth quarter of 1984 and the first quarter of 1985.
- Most processing services companies were slow to adjust their expenditures to the slower revenue growth rate with the attendant impact on net income. Minor growth has been achieved in the last quarter (6%), and the slowing in growth of revenue looks likely to continue throughout 1985.

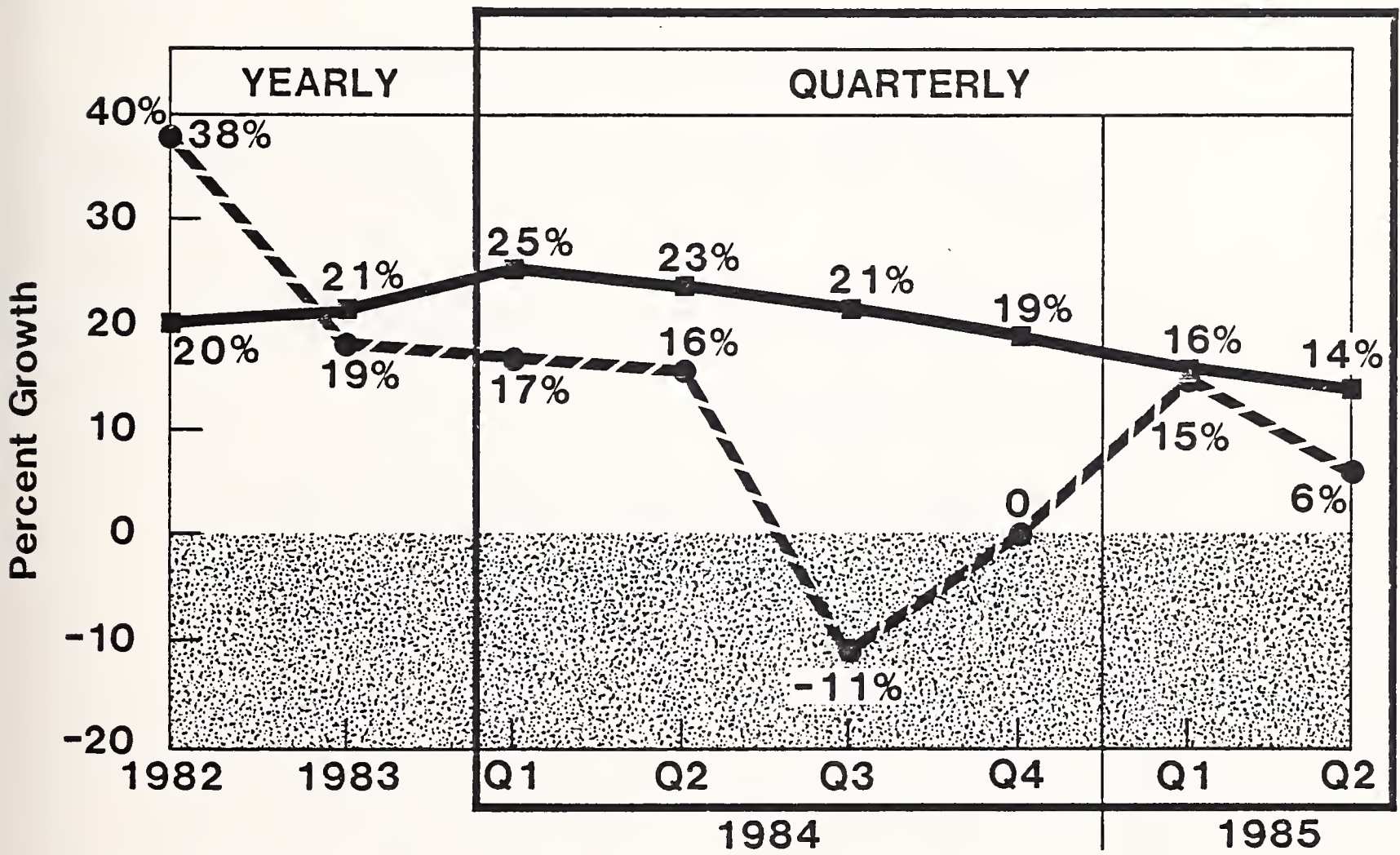
EXHIBIT VI-2

DISTRIBUTION OF PROCESSING SERVICES REVENUE
BY COMPANY SIZE, 1984

PROCESSING SERVICES SUB MODE	COMPANY SIZE		TOTAL (Percent)
	<\$10 MILLION (Percent)	≥\$10 MILLION (Percent)	
Remote Computing	18%	38%	56%
Batch Processing	15	18	33
Facilities Management	1	10	11
Total	34%	66%	100%

INPUT®

PUBLIC PROCESSING SERVICES VENDORS



Revenue —■—
Income ●- - -●

Note: Excludes Anacomp.
Last Update: 10-01-85

D. PROCESSING SERVICES TRENDS ANALYSIS

- Growth of the processing services sector showed a slowing trend in the latest quarterly analysis through June 1985 (see Exhibit VI-4).
 - 1984 revenue grew 22% over 1983 (for the 32 company sample).
 - Rolling nine months' revenue comparison shows a 16% growth.
 - The last six months' revenue in 1984 grew 15% over the year earlier period.
- Net income is still growing and on an upward path (see Exhibit VI-5).
 - Up 7% in 1984 over 1983.
 - Up 8% in the last nine months over the year earlier period.
 - Up 11% in the last six months over the year earlier period.
- These results are impacted by continued poor income performance from Epsilon, Fidata, Network D.P., and Telecredit. In addition, losses continued at Keydata and Computer Research. Anacomp had the largest single year loss ever recorded in the processing services industry in 1984--over \$82 million but is slowly recovering.
- The best performers are well focused, specialized service companies. Cycare, Paychex, ADP, Shared Medical, Systematics, and Telerate have retained excellent net income on a steady revenue growth curve.
- The total sample was 32 companies representing 20% of the processing services industry revenues. Note that Anacomp's results have been removed

EXHIBIT VI-4

REVENUES OF PUBLIC PROCESSING SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE (\$ Thousands)										GROWTH (Percent)		
		1983			1984					1985		1984/ 1983	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTERS
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2			
ADP	06-30	202323	218481	613722	234915	233195	236557	253620	768287	277528	266310	18	15	15
CITIZEN FIN	12-31	2378	2267	7632	2520	2504	7582	2421	15129	2683	2551	37	4	2
COMDATA NTWK	12-31	18198	18739	63369	19735	19939	20547	20945	81166	20400	20509	25	9	8
COMPUERVE	04-30	12579	13172	47943	14692	15447	16422	17684	64245	19708	20019	34	32	30
COMPUTER LAN	12-31	14208	15943	85215	35301	26305	17280	19300	98184	38397	24770	15	4	0
COMPUTER NET	03-31	4306	3474	15699	2684	1787	4345	7648	16664	3800	5725	5	219	292
COMPUTER RES	08-31	1729	1498	5136	2033	1946	1914	2006	7699	2028	1789	23	5	-4
COMPUTER SER	02-28	2500	2600	9836	2525	2400	2420	2514	9859	2604	2717	0	4	5
COMPUTONE	05-31	6265	8443	28062	8728	10030	3204	12743	40705	21089	12000	45	58	76
COMSHARE	06-30	18340	17869	73873	18016	18793	16725	15473	68997	14846	16010	-7	-15	-16
COOK DATA SV	12-31	1324	1081	5625	1356	1066	1598	1200	5220	1351	1045	-7	3	-1
CYCARE	12-31	7636	8309	29246	7987	9402	10931	11754	40074	9938	11611	37	30	24
DST SYSTEMS	12-31	12863	12509	47830	13405	14709	14856	15157	58127	17430	18941	22	27	29
DYATRDN	12-31	8248	11341	33858	8503	8305	8248	14460	39516	9592	9374	17	19	14
EPSILON	05-31	7701	9766	32718	10065	12779	11265	10210	44319	12072	14020	25	11	14
FIDATA	12-31	36207	36735	144406	36990	39207	38086	38000	152283	33007	31557	5	-9	-15
GENESEE	05-31	220	223	1050	225	275	317	347	1164	351	402	11	52	51
INFO. RESOURC.	12-31	544	6622	16193	13891	14332	15568	17298	61089	17458	18332	277	52	27
KEYDATA	07-31	1340	1317	5289	1423	1416	1163	1158	5160	1107	1050	-2	-20	-24
NAT DATA	05-31	33377	34349	128151	37146	34061	33752	34667	139826	36376	36103	9	2	2
NETWK D.P.	03-31	813	611	2643	628	833	659	657	2777	650	763	5	0	-3
NUMERAX	06-30	1848	1989	7028	2094	2184	2304	2404	8986	2499	2663	28	21	21
PAYCHEX	05-31	7533	7454	27765	8049	8683	9577	9917	36226	10936	10936	30	31	31
PAY-FONE	06-30	1248	1427	5024	1305	1425	1698	1980	6408	1713	1614	29	28	22
QUOTRON	12-31	40277	42213	155810	44493	46631	47921	50754	189799	48813	50449	23	13	9
SCIENTIF.COM	06-30	3374	3578	13470	3857	4059	3358	3718	14992	3696	3669	11	-4	-7
SEI CORP	12-31	17703	20889	69239	23037	23043	23968	23655	93703	25029	26894	35	13	13
SHARED MEDIC	12-31	54079	56991	210814	59763	62818	65726	68446	256753	72708	76876	22	21	22
SYSTEMATICS	05-31	19008	18587	71382	20455	20662	21896	22642	85655	24443	26894	20	24	25
TELECREDIT	04-30	15839	20500	68281	18924	20244	19602	23813	82583	21639	22743	21	14	13
TELERATE	09-30	19991	25611	79145	27460	29323	31574	34209	122566	36926	40661	53	36	37
TSR INC	05-31	3555	4042	14092	4512	4449	4485	4481	17927	4420	4893	27	5	4
TOTALS		577574	628630	2320566	686837	692240	701548	745683	2826308	796227	767073	22	16	15

32 COMPANIES

LAST UPDATED: 10-01-85

EXHIBIT VI-5

NET INCOME OF PUBLIC PROCESSING SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME (\$ Thousands)										GROWTH (Percent)		
		1983			1984					1985		1984/ 1983	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTERS
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	% (+/-)		
ADP	06-30	13650	17550	68705	22100	21830	15395	20137	79462	26140	26178	16	18	19
CITIZN FIN	12-31	516	540	2361	393	282	1004	254	1933	400	307	-18	-21	5
COMDATA NTHK	12-31	2988	2899	11083	3075	3637	3881	2674	13267	3400	3500	20	0	3
COMPUTER LAN	12-31	-1104	-1431	8630	7145	2762	-1585	-1751	6571	7164	1754	-24	-15	-10
COMPUTER NET	03-31	-848	68	-551	33	-538	-541	107	-939	513	56	-70	255	213
COMPUTER RES	08-31	96	98	554	114	128	0	21	263	80	-33	-53	-30	-31
COMPUTER SER	02-28	230	425	1158	300	240	205	350	1095	185	220	-5	-22	-35
COMPUTONE	05-31	74	30	1144	-818	305	208	266	-39	423	450	-103	336	270
COMSHARE	06-30	247	253	2335	415	475	-215	-5479	-4804	577	350	-306	-498	4
COOK DATA SV	12-31	177	92	139	92	-88	247	50	301	40	103	117	101	3475
CYCARE	12-31	581	698	1899	473	555	731	341	2600	281	309	37	-17	-43
DST SYSTEMS	12-31	2616	1677	9057	2348	2846	2694	1977	9865	2529	2352	9	0	-6
DYATRON	12-31	-182	-4499	-4607	34	-267	-71	806	502	355	301	111	131	382
EPSILON	05-31	123	632	1331	257	576	-140	176	969	-231	396	-35	-77	-30
FIDATA	12-31	-4389	-3805	-8089	733	1561	-12924	-5000	-15630	1025	-343	-93	-186	-70
GENESEE	05-31	220	223	1050	225	275	317	347	1164	351	402	11	52	51
INFO.RESOURC.	12-31	896	1329	3702	1293	1161	1721	1736	5911	3189	2087	60	85	115
KEYDATA	07-31	2	1	-896	-4	35	-10	-215	-194	18	10	78	-684	-10
NAT DATA	05-31	2791	2832	11320	3191	3280	1106	1876	9453	2220	2340	-16	-31	-30
NETWK D.P.	03-31	219	-76	266	-14	212	-70	-79	49	-49	72	-82	-146	-68
NUMERAX	06-30	92	141	365	103	86	124	175	488	173	184	34	61	39
PAYCHEX	05-31	609	621	1895	378	413	684	785	2260	608	905	19	63	91
PAY-PONE	06-30	-170	-48	-66	-151	-237	83	105	-200	-67	37	-103	129	103
QUOTRON	12-31	6265	6735	23981	6917	6867	6425	6614	26823	5822	5700	12	-12	-16
SCIENTIF.COM	06-30	297	285	1159	317	331	191	10	839	184	192	-28	-59	-42
SEI CORP	12-31	1350	1395	5244	927	936	622	-1928	557	885	955	-89	-103	-1
SHARED MEDIC	12-31	7165	7448	27254	7535	8195	7729	9333	32792	9359	10050	20	24	23
SYSTEMATICS	05-31	1607	1389	5518	1395	1658	1526	2257	6836	2230	2632	24	50	59
TELECREDIT	04-30	886	1669	4543	1104	1473	925	918	4420	65	870	-3	-56	-64
TELERATE	09-30	6145	6464	22818	6900	7536	7751	8180	30367	8657	8227	33	20	17
TBR INC	05-31	207	251	864	254	316	512	529	1611	590	388	36	84	72
TOTALS		43356	45886	204166	67064	66841	38515	46072	218492	77116	71031	7	8	11

DS

30 COMPANIES

LAST UPDATED: 10-01-85

to avoid distortion of the entire sample and Bradford National appears under its new name--Fidata.

E. LARGEST AND FASTEST GROWING PROCESSING SERVICES VENDORS

- All of the top 20 largest processing services vendors are either major corporations in their own right (ADP, CDC, Shared Medical, Quotron, etc.) or subsidiaries of major corporations (EDS, CDC Information Services, McDonnell Douglas Information Services, GEISCO, etc.). There are no exceptions (see Exhibit VI-6).
- The top three will approach \$1 billion in information services revenues in 1985-1986 and the next four have a good chance of reaching that goal by the end of the decade. This clearly demonstrates that processing services is the first service market sector to attain maturity.
- Exhibit VI-7 provides a list of the fastest growing processing services vendors in 1984. This list is only for reference purposes since so many special circumstances qualify the performances:
 - Litton Computer Services merged the activities of Litton Mellonics with its own and acquired a data center from Informatics.
 - McDonnell Douglas benefitted from high growth but did not do so profitably.
 - Many of the others grew from relatively modest-sized revenue bases, making the growth rate of statistical significance only.
- However, there are some notable performances such as First Data Management, MTech, Telerate, Quotron, and First Data Resources.

EXHIBIT VI-6

LARGEST PROCESSING SERVICES VENDORS

RANK 1984	RANK 1983	COMPANY
1	1	Automatic Data Processing
2	2	Electronic Data Systems
3	3	Control Data Corporation
4	5	McDonnell Douglas Information Services
5	4	General Electric Information Services
6	6	Dun & Bradstreet - Business Information Services
7	10	First Data Resources, Inc.
8	9	Shared Medical Systems
9	12	Quotron Systems, Inc.
10	11	Equifax, Inc.
11	8	Computer Sciences Corp.
12	7	Geophysical Services, Inc.
13	16	Bradford National Corp.
14	15	Boeing Computer Services
15	14	McGraw-Hill, Inc.
16	18	Continental Telecom, Inc.
17	22	Mead Data Central
18	13	Bunker Ramo Information Systems Division
19	19	TRW Information Services
20	17	National Data Corporation
21	20	CCH Computax, Inc.
22	27	MTECH
23	21	Business Services - Bank of America
24	25	Telerate
25	28	Telecredit, Inc.

EXHIBIT VI-7

FASTEST GROWING PROCESSING SERVICES VENDORS

RANK 1984	COMPANY	GROWTH 1983-1984 (Percent)
1	LITTON COMPUTER SERVICES	286%
2	MCDONNELL DOUGLAS INFO. SERVICES	101%
3	FIRST DATA MANAGEMENT	79%
4	BRS	71%
5	INFORMATION RESOURCES	71%
6	MAY & SPEH PROCESSING CENTER	63%
7	FIRST FINANCIAL MANAGEMENT CORP.	57%
8	USERS, INC.	56%
9	MTECH	45%
10	TELECREDIT, INC.	44%
11	DIGICON INC.	38%
12	CCX NETWORK, INC.	38%
13	EPSILON DATA MANAGEMENT, INC.	36%
14	BUDGET TIME SHARE INC.	36%
15	FIRST DATA RESOURCES, INC.	36%
16	QUOTRON SYSTEMS, INC.	35%
17	MEAD DATA CENTRAL	34%
18	DATA COMMUNICATIONS CORP.	33%
19	THREE P.M.	32%
20	METROMAIL CORPORATION	31%
21	CONTINENTAL TELECOM, INC.	30%
22	EQUIFAX, INC.	29%
23	MANUFACTURING DATA SYSTEMS, INC.	29%
24	ELECTRONIC DATA SYSTEMS	23%
25	MARTIN MARRETTA DATA SYSTEMS	19%

VII SOFTWARE PRODUCTS SECTOR ANALYSIS

VII SOFTWARE PRODUCTS SECTOR ANALYSIS

A. SOFTWARE PRODUCTS MARKET, 1984

- In 1984 the software products market reached \$10.4 billion in sales with a 33% growth over 1983. This good performance was not to the liking of many vendors, however, who had anticipated a continuation of the 50% to 100% growth rates experienced in 1983. As a result, net income for many of them shrank as expenses got ahead of revenues.
- The source of software products companies' revenues by type of activity is shown in Exhibit VII-1.
 - Unlike other categories of vendors, software products vendors grew their own market at a rate equivalent to their activities in other markets.
 - Professional services was the main source of revenues outside of software products (in excess of \$1 billion in 1984 for the first time ever) and contributed substantial growth.
 - Processing services activities grew most rapidly but from a very small revenue base.

EXHIBIT VII-1

SOFTWARE PRODUCTS COMPANIES'
REVENUE AND GROWTH RATES BY MODE OF SERVICE

SOFTWARE PRODUCTS REVENUE (\$ Millions/Year)	REVENUE SOURCE BY MODE OF SERVICE				Total by Company
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1983	\$130	\$6,468	\$ 794	\$144	\$7,536
1984	183	8,615	1,046	193	10,037
Growth Rate (Percent)	41%	33%	32%	34%	33%
Percent of Total 1984 Market by Type of Vendor	2%	86%	10%	2%	100%

B. DISTRIBUTION OF SOFTWARE PRODUCTS REVENUE

- The distribution of software products revenue by size of company within categories of software is shown in Exhibit VII-2.
 - Systems software vendors larger than \$10 million in sales captured nearly two-thirds of the total market.
 - Substantial percentages of applications software and systems software revenues were captured by small companies (less than \$10 million), indicating an industry in its growth phase.
 - Very few software products vendors are capitalizing on the revenue opportunities open to them in the areas of support, software maintenance, training, and other software services.

C. PUBLIC SOFTWARE PRODUCT COMPANIES

- The public software product companies included in INPUT's sample account for 17% of the revenues of the entire industry. Many small companies with substantial growth but small revenue base are not represented in the sample. (This affects the revenue base in a minor way but the growth rate for the entire industry is not altered greatly because of the high number of company failures still being experienced).
- Exhibit VII-3 shows the last three years' trend in revenue and net income growth (or contraction) for the sample and clearly demonstrates the rapid cooling of the industry in the fourth quarter of 1984 and the first quarter of 1985. A recovery of sorts does appear to be underway following a strong second quarter in 1985.

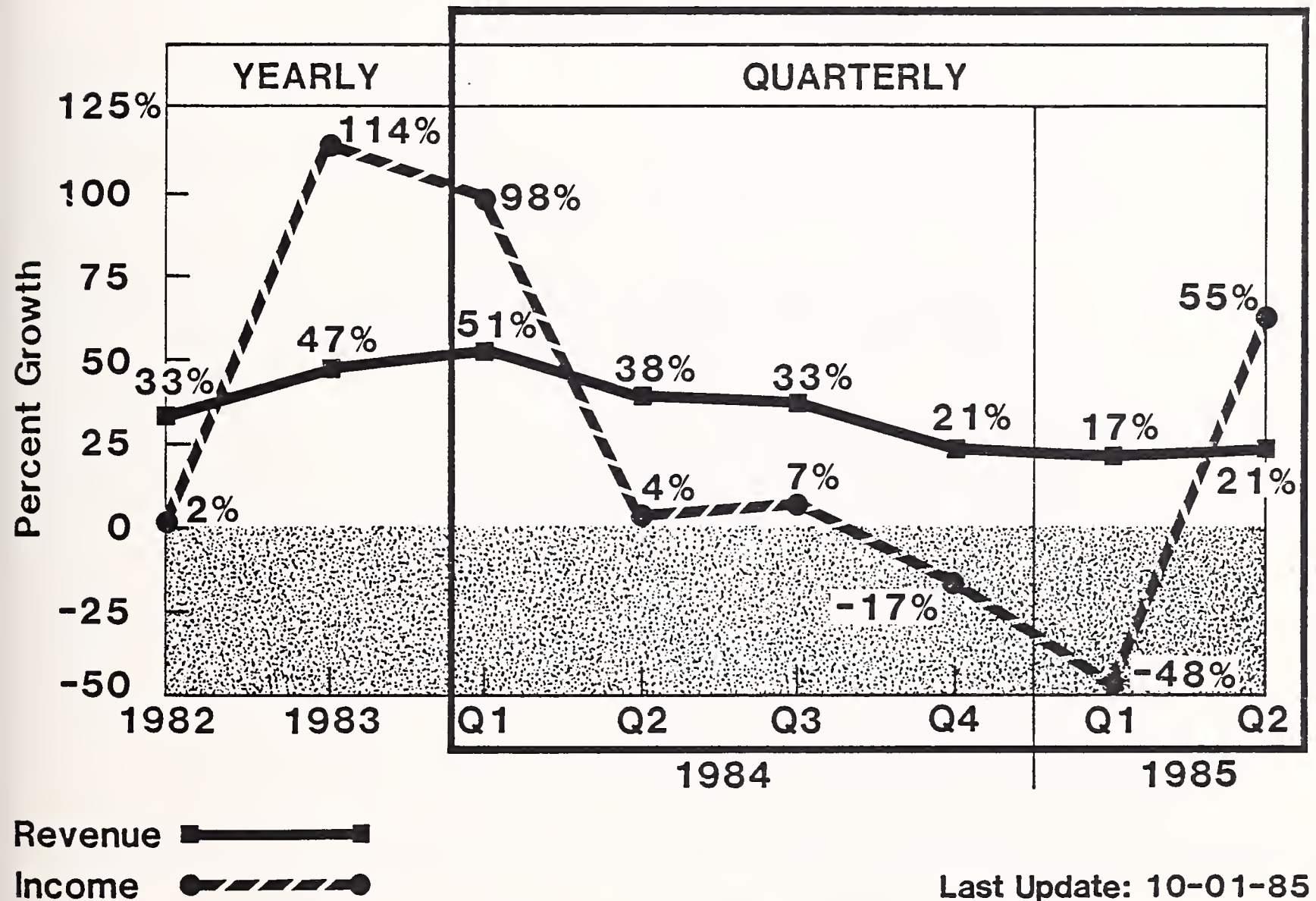
EXHIBIT VII-2

DISTRIBUTION OF SOFTWARE PRODUCTS REVENUE BY COMPANY SIZE, 1984

SOFTWARE PRODUCTS SUB MODE	COMPANY SIZE		TOTAL (Percent)
	< \$10 MILLION (Percent)	≥ \$10 MILLION (Percent)	
Applications Software	20%	26%	46%
Systems Software	14	33	47
Software Services	5	2	7
Total	39%	61%	100%

INPUT®

PUBLIC SOFTWARE PRODUCTS VENDORS



- Software product companies must constantly reevaluate their distribution channels and their competition to ensure that their products are correctly positioned. This is a fickle market with rapid changes in levels of demand; this requires exceptional management skill and nerve.

D. SOFTWARE PRODUCTS TRENDS ANALYSIS

- The rapid growth of the software products sector slowed significantly in the last quarter of 1984 (see Exhibit VII-4).
 - 1984 revenues grew 34% over 1983 (as compared to 47% for 1983 over 1982), while the nine months' comparison showed a 20% growth.
 - The rolling six months' revenue results show an 19% growth over the year-earlier period completing a pattern of rapid cooling in the industry's development.
 - During the last quarter (second quarter of 1985), growth was 21%--a slight improvement.
- Net income has begun a recovery (See Exhibit VII-5).
 - 1984 net income grew 8% over 1983 but was followed by a rolling nine months' contraction (-13%).
 - The last six months have seen a slowing of the contraction trend (-8%). These averages are impacted by ADR, BPI Systems, Hogan Systems, Information Sciences, MicroPro International, and NCA which all had poor quarters.

EXHIBIT VII-4

REVENUES OF PUBLIC SOFTWARE PRODUCTS COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE (\$ Thousands)										GROWTH (Percent)		
		-----1983-----			-----1984-----					-----1985-----		1984/ 1983	LAST 3 ROLLING	LAST 2 ROLLING
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	%(+/-) QUARTERS	QUARTERS	QUARTERS
ADR	12-31	24864	30151	89086	21549	28523	33663	44469	128204	34300	30083	44	36	29
AMERICAN S/W	04-30	4701	6201	19161	5637	6581	7189	7992	27419	7813	8828	43	34	36
APPLIED COMM	09-30	3874	3567	15674	5676	6697	6875	5490	24738	6833	7997	38	27	20
ASHTON TATE	01-31	11433	13545	39846	11207	19193	24709	27172	82281	23971	27501	106	79	69
BGS SYSTEMS	01-31	2217	3617	9192	2546	2500	2349	3531	10926	2886	3157	19	11	20
BPI SYSTEMS	03-31	2670	2452	9335	2635	2495	2800	1692	9622	2361	2344	3	-16	-8
COMSERV	12-31	3807	5000	16321	5487	6291	6326	6771	24875	4520	8824	52	20	13
COMPUTER AS.	03-31	18240	26070	76694	24528	22009	31056	38766	116359	37169	31257	52	48	47
CONTINUUM	03-31	7249	8520	28059	8314	9157	9999	11410	38880	17827	19000	39	86	111
CULLINET	04-30	27703	31386	108358	35149	40265	43684	47423	166521	52728	42277	54	33	26
HOGAN SYST.	03-31	8524	7212	24978	16469	6695	11342	4604	39110	5604	4066	37	-53	-58
INFORMATICS	12-31	50262	59756	197892	50921	50076	53833	56982	211814	49918	55443	7	1	4
INF. SCIENCE	04-30	3970	8989	25801	12087	7336	6626	8038	34067	6849	6589	32	-24	-31
INNOVATIVE	06-30	480	656	1942	707	489	1380	1833	4409	1495	1600	127	166	159
INT.SOFT.SYS	12-31	6309	8686	24177	5904	6970	8852	11906	33632	7663	6673	39	31	27
LOTUS DEV.	12-31	16465	23903	53006	28269	32628	45649	50432	156978	44679	59276	196	82	71
NSA	12-31	30165	58163	145176	32250	31002	31218	56390	150860	24974	38124	4	-2	0
MICROPRO INT'L	08-31	16374	20555	59159	18887	15661	12384	11679	58611	9959	10275	-1	-42	-41
NCA CORP	12-31	4607	5181	17974	5501	6113	5115	6853	23582	5194	6054	31	8	-3
ON-LINE S/W	05-31	7777	6666	25824	6182	6583	6891	7322	26978	8226	8300	4	23	29
PANOSPHIC	04-30	11452	16125	49918	14966	12505	16658	20050	64179	18117	16257	29	25	25
POLCY MGMT	12-31	15701	17487	62268	19276	20977	21316	23246	84815	25032	25725	36	28	26
SCIENTIFIC S	12-31	10667	11600	30893	10323	9142	8332	11084	38881	7429	8144	26	-14	-20
SOFTTECH	05-31	9530	12222	41624	10922	10884	7990	9034	38850	8998	10391	-7	-16	-11
SOFTWR AG	05-31	8663	9906	35030	10528	12030	11938	12657	47153	12055	14110	35	20	16
STERLING S/W	09-30	3932	4251	12376	4797	4582	5063	4850	19292	6043	6751	55	29	36
UCCEL	12-31	38000	44550	152963	39042	42974	42709	49708	173433	46144	48943	13	14	16
TOTALS		349636	446417	1372727	409779	420358	463948	540404	1836469	478787	509939	34	20	19

27 COMPANIES

LAST UPDATED: 10-01-85

EXHIBIT VII-5

NET INCOME OF SOFTWARE PRODUCTS COMPANIES

COMPANY NAME	FISCAL YEAR END	NET AFTER TAX INCOME (\$ Thousands)										GROWTH (Percent)		
		1983			1984					1985		1984/ 1983	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTERS
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	% (+/-)		
ADR	12-31	3114	4108	7460	333	1694	2542	5093	9662	600	-3140	30	-38	-225
AMERICAN S/W	04-30	956	1382	3994	961	1181	1235	1666	5043	1388	1282	26	23	25
APPLIED COMM	09-30	481	-401	972	673	926	1007	147	2753	734	1395	183	90	33
ASHTON TATE	01-31	1596	1765	6230	149	682	3483	3149	7463	2344	3456	20	245	598
BBS SYSTEMS	01-31	325	622	1335	143	92	23	860	1118	354	363	-16	34	205
BPI SYSTEMS	03-31	613	380	2027	269	-72	-1565	-714	-2080	-212	56	-203	-251	-179
COMSERV	12-31	-2955	-1000	-5813	-2840	-1874	-1135	-9747	-15596	-1967	1775	-168	-74	96
COMPUTER AS.	03-31	1583	4610	8446	2694	1024	2231	6283	12232	3562	1397	45	35	33
CONTINUUM	03-31	617	935	2703	518	1374	1107	1179	4178	2064	2100	55	89	120
CULLINET	04-30	3811	4230	15218	4812	5501	5977	6354	22544	6900	4233	49	20	8
HOGAN SYST.	03-31	1802	622	3603	4673	-1485	1007	-1352	2843	-12018	-2992	-21	-529	-571
INFORMATICS	12-31	2264	4354	8546	673	-1176	1050	4133	4680	68	-579	-45	-6	-2
INF. SCIENCE	04-30	-236	408	1738	1554	-1053	-1808	-6219	-7526	-2947	-347	-333	-1202	-357
INNOVATIVE	06-30	-155	-16	-19	-162	-1430	-812	-588	-2992	-298	-200	-15647	32	69
INT.SOFT.SYS	12-31	955	1583	3001	247	472	1184	2325	4228	420	613	41	46	44
LOTUS DEV.	12-31	4708	6773	14316	7495	7647	9102	11802	36046	9631	10744	152	47	35
MSA	12-31	-350	10195	10769	484	-1662	-1791	3212	243	-2721	3063	-98	-61	129
MICROPRO INT'L	08-31	2974	2902	9271	3130	620	-756	-620	2374	-870	468	-74	-115	-111
NCA CORP	12-31	321	274	1107	307	265	-502	155	225	-1202	-55	-80	-230	-320
ON-LINE S/W	05-31	787	-241	1039	-1146	-349	194	380	-921	646	500	-189	188	177
PANSOPHIC	04-30	2749	3382	8648	2197	1174	3001	4374	10746	3266	2038	24	43	57
POLCY MGMT	12-31	2631	2724	9728	3070	3371	3587	3680	13708	3827	3994	41	25	21
SCIENTIFIC S	12-31	1051	1500	3007	634	102	406	827	1969	-342	147	-35	-72	-126
SOFTTECH	05-31	515	145	1907	301	547	-347	135	636	198	-1757	-67	-243	-284
SOFTWR AG	05-31	1118	1293	3141	1662	1783	1873	1876	7194	1276	990	129	-13	-34
STERLINS S/W	09-30	317	170	1067	340	335	245	247	1167	641	575	9	73	80
UCCEL	12-31	220	1250	200	779	1649	3583	5024	12035	2362	3560	5918	225	144
TOTALS		31912	53949	123641	33950	21338	34123	44661	134072	17704	35180	8	-13	-8

27 COMPANIES

LAST UPDATED: 10-01-85

- In the last quarter the net income for the sample improved, growing at 55%.
- This is still a very strong market in selected vertical and cross-industry markets but even the principal vendors are beginning to experience a slowdown.
 - Data base management systems companies like Cullinet and Software AG grew more slowly and experienced a contraction in typical net income growth.
 - Lotus Development remains the star, still growing over 70% in the last three analysis periods, and net income growth over 30% in the same periods--a truly remarkable achievement in a tough market.

E. LARGEST AND FASTEST GROWING SOFTWARE PRODUCTS VENDORS

- It is no surprise that all five of the top five software products vendors in 1984 were equipment manufacturers. They have all concluded that the software market (or "program products," using IBM's terminology) is a major revenue growth and net income opportunity.
- The greatest opportunity does indeed lie with the equipment manufacturers who can leverage their huge installed equipment bases, sales forces, and marketing staff. Moreover, end users are attracted to a single-source supply of hardware and software.
- IBM is a standout example of this. The industry giant has seen its software products revenue growing very rapidly and has begun to target both applications and system software markets. Exhibit VII-6 lists the vendors by size of software products revenue in 1984.

EXHIBIT VII-6

LARGEST SOFTWARE PRODUCTS COMPANIES

RANK 1984	RANK 1983	COMPANY
1	1	IBM
2	4	NCR
3	2	Hewlett Packard Company
4	3	Digital Equipment Corp.
5	5	Burroughs
6	7	Cullinet Software
7	18	Lotus Development Corp.
8	6	Sperry Corp.
9	19	Microsoft Corp.
10	9	Wang
11	8	Management Science America
12	11	Applied Data Research
13	21	Computer Associates International, Inc.
14	13	Honeywell, Inc.
15	14	Control Data Corp.
16	15	Informatics General Corp.
17	15	Dun & Bradstreet
18	12	AT&T
19	16	UCCEL Corp.
20	29	Ashton-Tate
21	24	Data General Corp.
22	20	Tandy Corp.
23	22	Cincom Systems
24	23	Tandem Computers, Inc.
25	27	Pansophic Systems

- Lotus Development turned in an astonishing performance in 1984. Not only did they reach the number six position on the list of largest software vendors but grew 180% during the year with substantial net income.
- Exhibit VII-7 lists the top 25 software products vendors by growth rate in 1984. Leading the pack was Borland, an innovative systems/utility software company that shocked the micro industry with its aggressive pricing policy. Borland must now prove its success is more than a one-year wonder.
- Five out of the top seven vendors in this list are micro software-based companies that will find 1985 a much tougher year in which to succeed.

EXHIBIT VII-7

FASTEST GROWING SOFTWARE PRODUCTS COMPANIES

RANK 1984	COMPANY	GROWTH 1983-1984 (Percent)
1	BORLAND	200%
2	LOTUS DEVELOPMENT CORP.	180%
3	ORACLE CORPORATION	150%
4	MICROSOFT CORP.	146%
5	PRIME COMPUTER	114%
6	SOFTWARE PUBLISHING CORP.	109%
7	ASHTON-TATE	100%
8	DBMS, INC.	100%
9	MORINO ASSOCIATES, INC.	100%
10	WALKER INTERACTIVE PRODUCTS	90%
11	MEDICAL INFORMATION TECHNOLOGY	88%
12	ADVANCED SYSTEMS APPLICATIONS	86%
13	COGNOS INCORP.	78%
14	COMPUTER ASSOCIATES INTERNAT'L,	76%
15	CANDLE CORPORATION	60%
16	STOCKHOLDER SYSTEMS, INC.	57%
17	VLSI TECHNOLOGY	57%
18	DATA GENERAL CORPORATION	54%
19	APPLIED COMMUNICATIONS, INC.	50%
20	COMSERV CORPORATION	50%
21	CULLINET SOFTWARE	50%
22	APPLIED DATA RESEARCH	48%
23	MACNEAL SCHWENDLER CORP.	43%
24	MICRO-FOCUS, INC.	43%
25	KIRCHMAN CORP.	40%

VIII PROFESSIONAL SERVICES SECTOR ANALYSIS

VIII PROFESSIONAL SERVICES SECTOR ANALYSIS

A. PROFESSIONAL SERVICES MARKET, 1984

- In 1984 the professional services market reached \$8.9 billion in sales, growing 20% or below the information services industry average. The professional services companies share of that market fell 1% to 19%.
- In the year a diversification trend was established with many professional services vendors seeking to gain a foothold in other markets, particularly software products and turnkey systems. Because the starting base for such activities was small in revenue, the growth rates were quite impressive.
- Inroads were made, however, into the professional services market by other types of vendors, particularly the software products vendors who rapidly expanded their activities in 1984. It is far easier for a software products vendor to add professional services activities than it is for a professional services vendor to add software products.
- Exhibit VIII-1 shows the growth rates of each category of activity for professional services vendors.
 - The fastest growing market was turnkey systems, a natural adjunct to professional services activities.

EXHIBIT VIII-1

PROFESSIONAL SERVICES COMPANIES'
REVENUE AND GROWTH RATES BY MODE OF SERVICE

Professional Services Revenue (\$ Millions/Year)	REVENUE SOURCE BY MODE OF SERVICE				Total by Company
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1983	\$493	\$486	\$5,377	\$154	\$6,510
1984	578	664	6,283	267	7,792
Growth Rate (Percent)	17%	37%	17%	73%	20%
Percent of Total 1984 Market by Type of Vendor	7%	9%	81%	3%	100%

- The largest market outside of professional services was software products which provided 9% of revenue in 1984.
- Processing services (particularly processing services facilities management) added another \$578 million in the year.

B. DISTRIBUTION OF PROFESSIONAL SERVICES REVENUE

- The distribution of professional services revenue by submode is shown in Exhibit VIII-2, broken out by size of company.
 - Clearly, the principal submarket is software development (predominantly large customized software projects), which contributed almost two-thirds of all professional services revenue in 1984.
 - Large vendors (\$10 million in sales or over) captured 64% of the total market.
- One of the encouraging factors for smaller vendors is the fact that their growth and profitability, measured as a percent of revenue, is on average higher than that of the larger vendors who have difficulty managing the highly diverse and complex nature of their operations once they pass the \$10 million sales mark.

C. PUBLIC PROFESSIONAL SERVICES COMPANIES

- INPUT has monitored 24 public professional services vendors since 1981, and the revenue trend for the sample has always been one way--up at about 15% per annum. This slightly understates the overall market because of the

EXHIBIT VIII-2

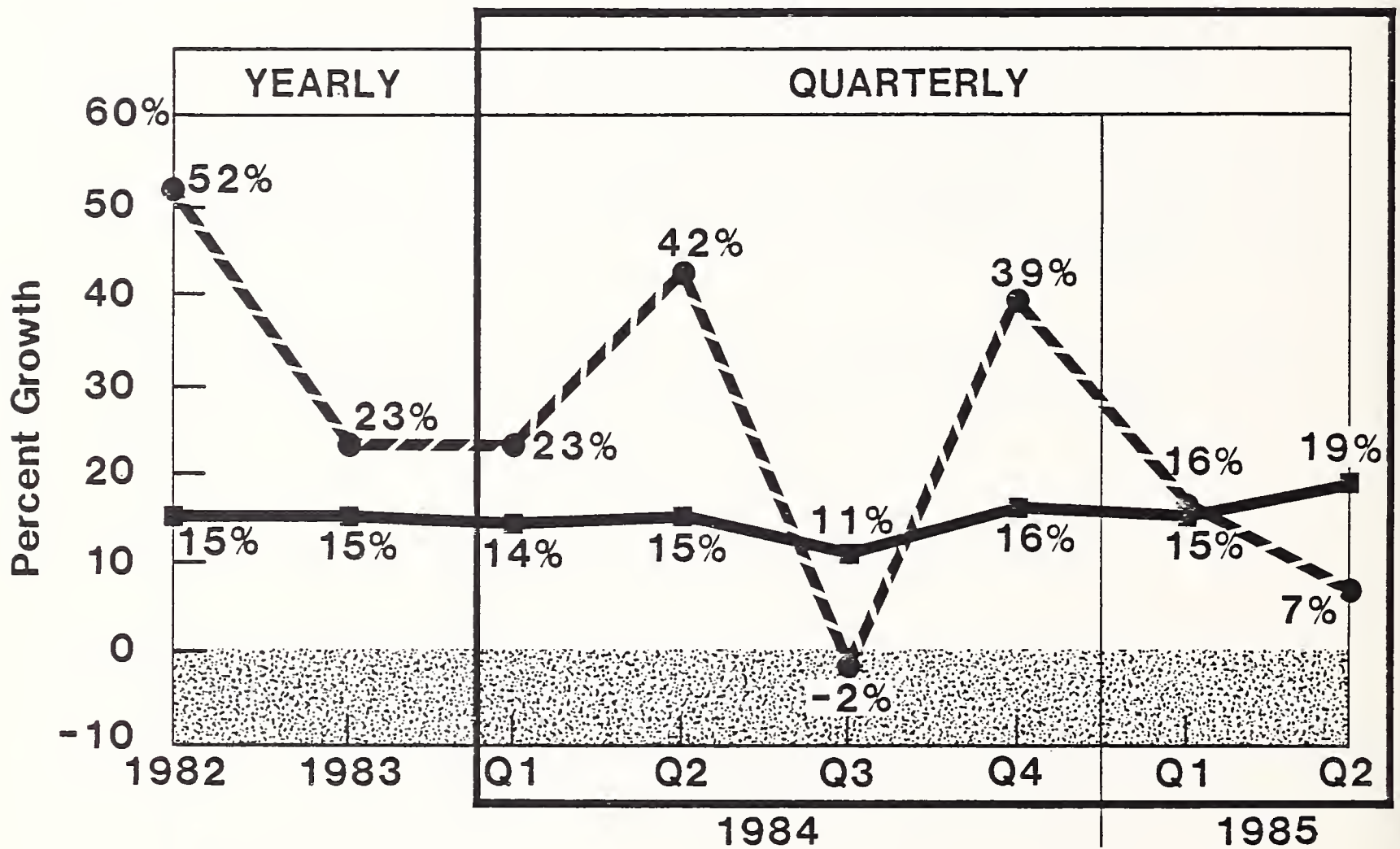
DISTRIBUTION OF PROFESSIONAL SERVICES REVENUE
BY COMPANY SIZE, 1984

PROFESSIONAL SERVICES SUB MODE	COMPANY SIZE		TOTAL (Percent)
	< \$10 MILLION (Percent)	≥ \$10 MILLION (Percent)	
Software Development	22%	44%	66%
Consulting	8	9	17
Education and Training	4	6	10
Facilities Management	2	5	7
Total	36%	64%	100%

smaller vendors whose program is more rapid, but is a clear indication of the ongoing need, in good times and bad times alike, for competent professional help in the implementation of information processing systems.

- Exhibit VIII-3 shows the trend in both revenue and net income over the last three-and-one-half years. Like other categories of vendors, professional services companies had a difficult third quarter in 1984 but recovered quickly the following quarter. Uncharacteristically, the second quarter of 1985 has shown a steeper growth in revenue (19%) and a slower growth in net income (7%) than usual. INPUT believes this is due to the building of a backlog of deferred projects that are gradually being released for contract and which point to an improvement in the climate for the information services market as a whole.
- The remainder of 1985 should be a period of strong growth for professional services vendors, but the main problems for unimpeded growth remain:
 - The lack of trained, competent staff has become acute and little progress has been made in solving this dilemma.
 - The on-time, on-budget delivery of large, complex projects is still not within the capability of the industry. This problem will not only not go away but will steadily increase because the complexity of new systems (particularly networked distributed processing systems), the higher degree of integration needed, and the increasing levels of reliability demanded by the end user will further complicate an already difficult task.

PUBLIC PROFESSIONAL SERVICES VENDORS



Last Update: 10-01-85

D. PROFESSIONAL SERVICES TRENDS ANALYSIS

- The growth of revenues in the professional services sector suddenly improved in the second quarter (see Exhibit VIII-4):
 - 1984 revenues grew 14% over 1983 (compared to 16% in 1983 over 1982).
 - The last nine months' revenue comparison shows a 16% growth.
 - The last six months' revenue results for 1984 shows a 17% increase over the previous six months.
- In the second quarter, growth was up 19% over last year.
- Net income growth shows a weakening pattern, however (see Exhibit VIII-5):
 - Up 23% in 1984 over 1983.
 - Up 21% in the rolling three quarters analysis.
 - Up a smaller 12% in the latest six months.
 - A growth of 7% in the last quarter.
- A number of small- and medium-sized vendors continue to show excellent growth patterns:
 - AGS Computer (a multiservice vendor).
 - Computer Data.

EXHIBIT VIII-4

REVENUES OF PUBLIC PROFESSIONAL SERVICES COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE (\$ Thousands)										GROWTH (Percent)		
		-----1983-----			-----1984-----					-----1985-----		1984/ 1983	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTERS
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	%(+/-)		
202 DATA SYS	10-31	442	1669	3648	627	491	553	503	2174	489	582	-40	-44	-6
ACT	12-31	3121	2659	11185	2679	3235	2741	3227	11882	3036	3525	6	14	11
ADV. SYSTEMS	10-31	11929	10003	39942	9274	9486	11967	10557	41284	11529	11254	3	16	21
AGS COMPUTER	12-31	38775	46584	145911	53029	52944	56147	61960	224080	65742	70327	54	30	28
AM. MGT. SYS	12-31	21023	20747	79196	20998	23023	25374	27611	97006	26647	27260	22	26	22
ANALYSTS INT.	06-30	5477	7304	25600	8152	8754	9420	10368	36694	11954	12549	43	44	45
AUXTON COMP	12-31	5126	5659	19515	5873	5635	6251	6146	23905	6453	7182	22	15	18
BDM INTERN'L	12-31	40657	41681	151145	41607	45730	48838	55225	191400	50764	62021	27	30	29
BBN	06-30	23710	25150	94470	27459	30031	29437	31875	118802	35294	41614	26	32	34
C.A.C.I.	06-30	26791	30249	115344	26070	26736	24383	24622	101811	24961	23990	-12	-11	-7
COMP DATA	06-30	12780	13039	48200	14086	14966	15028	14080	58160	12666	13097	21	-5	-11
COMP HORIZ	02-28	8100	9140	30679	10164	10435	10588	11636	42823	11973	12507	40	21	19
CSC	04-01	184395	168525	718880	185028	173895	172027	178684	709634	198887	187565	-1	7	8
COMP TASK SR	12-31	13551	16136	53885	17377	18629	21876	24741	82623	26035	28166	53	51	51
DATA ARCHTS	11-30	7914	5420	23545	3527	4586	4398	3026	15537	4264	5347	-34	-7	18
DYNAMICS RES	12-25	9701	15442	43663	11241	11944	12125	17760	53070	14633	14242	22	21	25
INTERMETRICS	02-28	7765	9063	32821	10216	10537	11016	10869	42638	10587	11324	30	10	6
KEANE	12-31	5192	6871	21659	7317	8430	8915	9166	33828	9951	10341	56	30	29
LOGICON	03-31	30631	32692	120674	36691	39380	45541	39646	161258	43689	44100	34	17	15
PRC	06-30	79856	76467	318906	79480	84919	78177	81770	324346	93931	118485	2	22	29
RAND INFO.	02-28	2994	3735	12392	2842	2546	2753	2920	11061	2924	2611	-11	-7	3
SYSCON CORP	11-30	21871	26101	87015	24006	27253	26084	26687	104030	26174	28462	20	5	7
SYST. & COMP.	09-30	12415	12688	46901	13560	15017	16500	17000	62077	12512	11874	32	0	-15
TECHNALYSIS	12-31	1651	2007	7941	2417	2317	2276	2938	9948	3128	3142	25	37	32
TOTALS		576867	589031	2253117	613720	630919	642415	673017	2560971	708223	751548	14	15	17

24 COMPANIES

LAST UPDATED: 10-01-85

EXHIBIT VIII-5

NET INCOME OF PUBLIC PROFESSIONAL SERVICES COMPANIES

		NET AFTER TAX INCOME (\$ Thousands)									GROWTH (Percent)			
COMPANY NAME	FISCAL YEAR END	-----1983-----			-----1984-----					-----1985-----		1984/ 1983	LAST 3 ROLLING	LAST 2 ROLLING
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	%(+/-)QUARTERS	QUARTERS	QUARTERS
202 DATA SYS	10-30	15	195	452	76	20	14	2	112	5	3	-75	-97	-92
ACT	12-31	167	50	396	-94	179	23	59	167	83	135	-58	105	156
ADV.SYSTEMS	10-31	1697	1084	4809	989	802	335	1064	3190	1166	1204	-34	19	32
AGS COMPUTER	12-31	1560	2196	5785	1559	1307	1778	1195	5839	1925	1734	1	-4	28
AM. MGT. SYS	12-31	532	718	2012	449	643	812	937	2841	1269	1658	41	113	168
ANLYSTS INT.	06-30	-237	-213	-797	-310	-302	-149	78	-683	454	546	14	231	263
AUXTON COMP	12-31	394	425	1732	470	360	490	241	1561	340	461	-10	-17	-3
BDM INTERN'L	12-31	1629	1964	6346	1747	1921	2051	2354	8073	2130	2512	27	24	27
BBN	06-30	1091	1303	4260	1656	1879	1837	1978	7350	2190	2446	73	37	31
C.A.C.I.	06-30	12	1287	1942	-777	1461	564	658	1906	770	553	-2	1	93
COMP DATA	06-30	738	771	2590	860	509	824	817	3010	723	582	16	-1	-5
COMP HORIZ	02-28	453	626	1895	720	513	324	539	2096	643	666	11	-1	6
CSC	04-01	4397	4225	15826	7081	4637	3446	12403	27567	7232	5199	74	56	6
COMP TASK GR	12-31	406	379	1454	337	511	538	714	2100	773	893	44	94	96
DATA ARCHTS	11-30	-290	-1282	-1177	-319	322	230	367	600	306	364	151	181	22233
DYNAMICS RES	12-25	44	792	1007	-16	64	483	809	1340	437	252	33	78	1335
INTERMETRICS	02-28	-276	106	319	192	119	147	166	624	155	183	96	21	9
KEANE	12-31	8	10	232	91	145	169	214	619	233	191	167	159	80
LOGICON	03-31	1473	1564	5363	1680	1843	2071	2123	7717	2210	2378	44	32	30
PRC	06-30	3576	2985	11263	2304	2661	650	1625	7240	1398	2333	-36	-32	-25
RAND INFO.	02-28	7	2	-21	48	-47	-81	-892	-972	-236	-307	-4529	-47933	-54400
SYSCON CORP	11-30	915	1102	3495	895	1058	924	1188	4065	986	1103	16	7	7
SYST.& COMP.	09-30	2562	2288	8653	2569	2860	3000	2800	11229	627	97	30	-54	-87
TECHNALYSIS	12-31	243	272	928	224	250	271	276	1021	257	289	10	10	15
TOTALS		21116	22749	78764	22431	23715	20751	31715	98612	26076	25475	23	21	12

24 COMPANIES

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- Computer Task Group.
 - Dynamics Research.
 - Logicon.
 - Technalysis.
- While many such vendors show very strong revenue growth, a small number show either a decline (202 Data Systems, CACI, Systems & Computer Technology, Rand Information Services) or stagnation (CSC, Planning Research Corporation).
 - The total sample is 24 companies representing 33% of the professional services industry's total revenue.

E. LARGEST AND FASTEST GROWING PROFESSIONAL SERVICES VENDORS

- The list of the largest professional services vendors (see Exhibit VIII-6) shows how diverse the types of vendors have become:
 - Mainstream professional services vendors for whom the market is the principal source of income (e.g., Computer Sciences Corporation, Mitre, Logicon, PRC, etc.).
 - Big Eight CPA firms who are leveraging their privileged position as CPA to tens of thousands of major corporations into an entree for professional services (and other information services). Examples include Arthur Andersen; Peat, Marwick and Mitchell; and Price Waterhouse, etc.

EXHIBIT VIII-6

LARGEST PROFESSIONAL SERVICES VENDORS

RANK 1984	RANK 1983	COMPANY
1	1	Computer Sciences Corporation
2	2	Arthur Andersen & Company
3	4	Mitre Corporation
4	3	Burroughs Corporation
5	5	IBM
6	6	Logicon
7	7	Planning Research Corporation
8	13	McGraw Hill
9	9	Peat, Marwick & Mitchell
10	10	Price-Waterhouse
11	8	CACI, Inc.
12	14	Science Applications
13	11	Control Data Corp.
14	21	Computer Task Group
15	28	AGS Computers
16	12	GEISCO
17	18	Syscom Corporation
18	19	American Management Systems
19	16	Deltak/Prentice Hall
20	17	Grumman Data Systems
21	26	Batelle Memorial Institute
22	20	Boeing Computer Services
23	35	DBA Systems, Inc.
24	23	DEC
25	15	McDonnell Douglas Information Services

- Large system manufacturers who are finding that they must provide planning, programming, systems design, and consulting services in order to sell their systems.
- Large processing services companies that are taking on substantial customized systems integration work (often related to MRP or CIM projects), such as GEISCO, Boeing Computer Services, and McDonnell Douglas Information Services.
- A large segment of the professional services market is government contract-related, which, if managed properly, can provide a good steady stream of revenue but if managed poorly can quickly prove a drain on resources.
- Exhibit VIII-7 provides a list of the top 25 fastest growing professional services vendors.

EXHIBIT VIII-7

FASTEST GROWING PROFESSIONAL SERVICES VENDORS

RANK 1984	COMPANY	GROWTH 1983-1984 (Percent)
1	CALSPAN CORP.	275%
2	SAFEGUARD SCIENTIFIC	140%
3	CGA COMPUTER	125%
4	BUTLER COMPUTER	114%
5	AGS COMPUTERS	103%
6	DBA SYSTEMS	71%
7	CONSULTEC	67%
8	COMPUTER TASK GROUP	66%
9	SYSTEMS CONTROL, INC.	59%
10	TELOS CORPORATION	55%
11	SACHS/FREEMAN ASSOCIATES, INC.	50%
12	BATELLE MEMORIAL INSTITUTE	49%
13	KEANE INC.	48%
14	RMS TECHNOLOGIES	46%
15	ANALYSTS INTERNATIONAL CORE	44%
16	PAR TECHNOLOGY	42%
17	COMARCO, INC	40%
18	COMPUTER HORIZONS	39%
19	COMP-U-STAFF, INC.	38%
20	COMPUTER DYNAMICS	38%
21	COMPUTER DYNAMICS, INC.	38%
22	MERIT SYSTEMS, INC.	38%
23	DATRONICS, INC.	36%
24	LOGICON	33%
25	AMERICAN MANAGEMENT SYSTEMS	32%

IX TURNKEY SYSTEMS SECTOR ANALYSIS

IX TURNKEY SYSTEMS SECTOR ANALYSIS

A. TURNKEY SYSTEMS MARKET, 1984

- In 1984 the turnkey systems market was valued at \$6.4 billion and grew 32% over 1983. This was a banner year in many respects, but a closer examination of the quarterly trends shows that some caution should have been exercised by the third quarter of 1984 by observing what was happening to the other information services sectors.
- In practice, what happened was that most vendors waited for the sharp downturn in revenue to occur before taking cost-cutting measures with disastrous results on the bottom line. This serious condition has continued through the second quarter of 1985 with an even slower revenue growth of only 9%.
- Early returns for the third quarter are in line with other information services sectors, showing a modest recovery in revenue and sharp improvements in net income. For many vendors, however, this improvement has come a little late, and it will take a prolonged series of profitable quarters to overcome the damage incurred to the balance sheet.
- The revenue sources for turnkey systems vendors in 1983 and 1984 is shown in Exhibit IX-1. Unlike any of the other information services sectors, turnkey systems vendors are far more narrowly focused.

EXHIBIT IX-1

TURNKEY SYSTEMS COMPANIES' REVENUE AND GROWTH RATES BY MODE OF SERVICE

TURNKEY REVENUE (\$ Millions/Year)	REVENUE SOURCE BY MODE OF SERVICE				Total by Company
	Processing Services	Software Products	Professional Services	Turnkey Systems	
1983	\$181	\$129	\$193	\$3,917	\$4,420
1984	191	189	255	5,048	5,683
Growth Rate (Percent)	6%	47%	32%	29%	29%
Percent of Total 1984 Market by Type of Vendor	3%	3%	5%	89%	100%

- In 1984 89% of their revenue came from their main markets and only minor revenue came from elsewhere.
- Being so focused is damaging in periods of slack sales, as has been proven in the last six months.

B. DISTRIBUTION OF TURNKEY SYSTEMS REVENUE

- The distribution of turnkey systems revenue by submode is shown in Exhibit IX-2.
 - Unlike any other sector, the majority of the revenue produced in the turnkey systems market was accomplished by small companies with sales of less than \$10 million.
 - Systems service and support is a much neglected opportunity for turnkey systems vendors that ought to produce 25-30% of total revenue but that currently only produces 15%.
 - Downturns that would have a slight affect on major vendors with stronger financials have a much more serious affect on a community of predominantly smaller companies.

C. PUBLIC TURNKEY SYSTEMS COMPANIES

- Exhibit IX-3 shows the last three years' trend in revenue and net income growth (or contraction) for the sample, and shows how easy it was for the turnkey systems vendors to believe that they would not be impacted by the downturn.

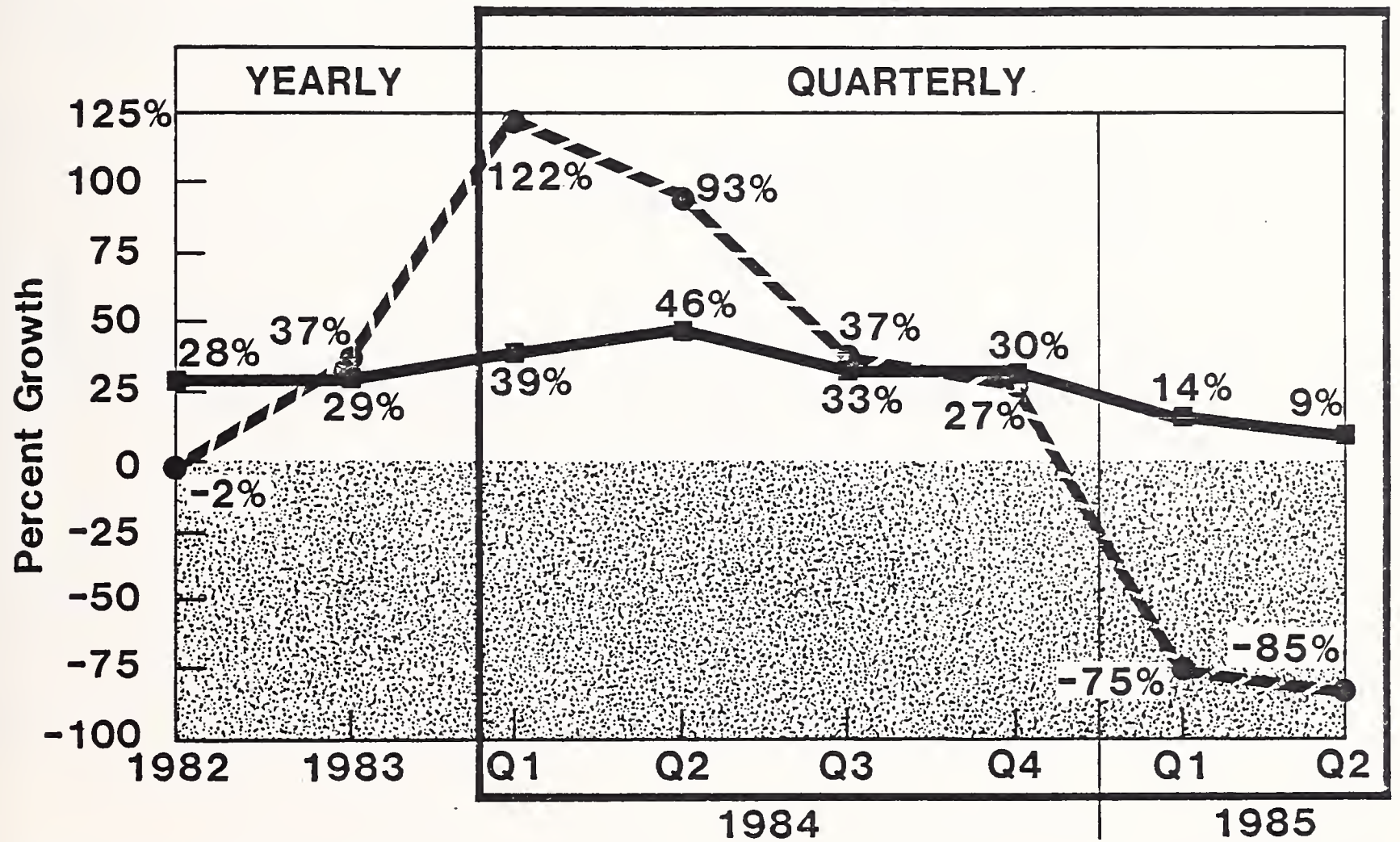
EXHIBIT IX-2

DISTRIBUTION OF TURNKEY SYSTEMS REVENUE
BY COMPANY SIZE, 1984

TURNKEY SYSTEMS SUB MODE	COMPANY SIZE		TOTAL (Percent)
	< \$10 MILLION (Percent)	≥ \$10 MILLION (Percent)	
Systems	48%	37%	85%
Support	8	7	15
Total	56%	44%	100%

INPUT®

PUBLIC TURNKEY SYSTEMS VENDORS



Revenue ■

Income ●

Last Update: 10-01-85

- Although the third and fourth quarters of 1984 did not continue the trend established in the first and second quarters of the same year, they could be interpreted as indications of a continued strong growth pattern.
- The two first quarters of 1985 have shattered that illusion, however, and may have permanently damaged several companies in the process.

D. TURNKEY SYSTEMS TRENDS ANALYSIS

- The revenue trend of turnkey systems vendors over the last 12 months has been one of steady growth, but a sharp slowdown is underway (see Exhibit IX-4):
 - 1984 revenue grew 36% over 1983 (for the sample).
 - The rolling nine months' comparison shows a 17% growth.
 - The latest six months shows an 11% growth over the previous year.
 - The last quarter shows a 9% growth over the previous year.
- Net income has plummeted (see Exhibit IX-5). In 1984 the companies listed averaged 57% growth over 1983. In the last quarter net income for the sample contracted by 80%.
- Outstanding performances are becoming rare and difficulties more numerous:
 - ASK Computer had a strong 50% growth in 1984 following by 16% over the last nine months (on a growing revenue base) and a slow 7% in the last six months.

EXHIBIT IX-4

REVENUES OF PUBLIC TURNKEY SYSTEMS COMPANIES

COMPANY NAME	FISCAL YEAR END	REVENUE (\$ Thousands)										GROWTH (Percent)		
		-----1983-----			-----1984-----					-----1985-----		1984/ 1983	LAST 3 ROLLING % (+/-) QUARTERS	LAST 2 ROLLING QUARTERS
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2			
ASK	06-30	12460	15114	51213	17561	19941	18003	21282	76787	19167	20761	50	16	7
AUTO-TROL	12-31	15079	17129	54129	16272	17157	16773	18725	68927	18901	16393	27	7	6
AVANT-GARDE	04-30	3270	4106	12870	4987	5713	4901	5276	20877	3690	3553	62	-2	-14
C3	03-31	16500	12870	68735	15100	15496	13467	19700	68763	18758	17068	0	32	24
COMFTEK RES.	03-31	4793	5491	19508	6218	5986	6055	6315	24574	6685	6723	26	11	10
COMP CNSL	12-31	27614	38657	103550	27237	36088	33321	34543	131189	25976	35076	27	-6	-4
COMP DSGN	08-31	493	612	1921	610	574	504	720	2408	768	679	15	15	19
COMPUTERV	12-31	104026	111648	399942	121759	133589	137133	163861	556342	105871	112288	39	4	-15
DAISY SYST.	09-30	7315	13060	28320	15700	18538	21810	25484	61532	29042	32511	188	84	30
DIMIS INC.	12-31	1106	606	4109	571	718	236	323	1848	345	162	-55	-55	-39
GERBER	04-30	42929	42423	159053	53733	54586	52615	52530	213464	64427	48341	34	10	4
HBO	12-31	16499	19339	67624	20407	21807	22384	24084	88682	44171	46400	31	36	115
INTERGRAPH	12-31	59272	84604	244046	78702	98769	105480	120811	403762	108973	130535	63	77	35
NAT D. COM	10-31	5831	1544	11428	1967	1646	1780	1689	7082	1606	1667	-38	-4	-9
PENTA SYST.	12-31	7173	6040	21716	5692	5981	6322	6039	24054	4395	4590	11	-16	-24
REYNOLDS & R	09-30	66253	67163	263821	72827	74247	75571	74602	297247	82501	93215	13	12	13
TERA CORP	06-30	4362	4059	16812	3668	5343	6439	8257	23727	7215	1761	41	32	0
TRIAD	09-30	28600	24126	92097	31230	29949	35100	23905	120184	22431	27322	30	-13	-18
TOTALS		423875	468591	1620894	494261	546128	562894	608166	2211449	564942	593168	36	17	11

16 COMPANIES

LAST UPDATED: 10-01-85

EXHIBIT IX-5

NET INCOME OF PUBLIC TURNKEY SYSTEMS COMPANIES

		NET AFTER TAX INCOME (S Thousands)									GROWTH (Percent)			
COMPANY NAME	FISCAL YEAR END	-----1983-----			-----1984-----				-----1985-----		1984/ 1983	LAST 3 ROLLING QUARTERS	LAST 2 ROLLING QUARTERS	
		Q3	Q4	TOTAL	Q1	Q2	Q3	Q4	TOTAL	Q1	Q2	%(+/-)		
ASK	06-30	991	1906	5139	1758	1487	1706	2138	7089	1788	2317	38	21	27
AUTO-TROL	12-31	416	968	-3276	773	1143	222	614	2752	-251	-4974	184	-260	-373
AVANT-GARDE	04-30	306	402	1048	527	626	396	245	1794	392	-269	71	-75	-89
CG	03-31	2000	436	8289	-400	1404	1303	742	3049	873	768	-63	65	53
COMPTON RES.	03-31	227	271	917	432	330	338	322	1422	1323	268	55	35	109
COMP CNSL	12-31	4086	5691	10392	1314	2835	1390	751	6290	-5505	-4610	-39	-195	-344
COMP DSGN	08-31	47	5	75	17	14	246	98	375	73	74	400	581	374
COMPUTERV	12-31	9093	10439	35340	10750	7363	4692	14921	37726	-18766	-19510	7	-122	-311
DAISY SYST.	09-30	1703	2307	4845	2600	2785	3297	3954	12636	4685	5532	151	94	90
DIHIS INC.	12-31	-288	-780	-1767	-724	-256	-529	-718	-2227	-307	-357	-25	21	32
GERBER	04-30	3402	3698	11251	5197	5796	6424	6293	23710	6546	4331	111	17	-1
HBO	12-31	2637	2751	10001	3229	3420	3608	3639	13896	5867	6107	39	55	80
INTERGRAPH	12-31	7719	10649	29342	10304	16470	17366	18796	62936	14340	16735	114	33	16
NAT D. COM	10-31	606	-617	-3260	-14	-447	7125	-209	6455	-272	-1073	298	-44	-192
PENTA SYST.	12-31	939	265	1719	100	111	-482	-1273	-1544	-482	-400	-190	-553	-519
REYNOLDS & R	09-30	3973	3693	13816	4201	4462	4789	4121	17573	4784	4984	27	12	10
TERA CORP	06-30	-750	-717	-1811	-1720	-1251	30	66	-2875	-1389	-3099	-59	-20	-51
TRIAD	09-30	1900	430	1439	1651	1262	1500	-1623	2790	-3574	207	94	-249	-216
TOTALS		39027	41797	123499	39995	47554	53421	52877	193847	10125	7031	37	-46	-30

18 COMPANIES

LAST UPDATED: 10-01-85

- Avant Garde had shown dramatic gains in 1984 with revenue up over 58% and net income up 71%. In the last six-month period revenues are down 11% and net income is down 35%.
- Computer Consoles showed a strong recovery with seven consecutive profit quarters until 1985. In the last two quarters losses have totaled \$10 million.
- Daisy Systems and Intergraph alone show steady revenue and net income growth. The overall net income picture is now abysmal with the exception of the aforementioned companies and others such as C3 and HBO.
- The sample is 18 companies representing 38% of the turnkey systems industry revenues.

E. LARGEST AND FASTEST GROWING TURNKEY SYSTEMS VENDORS

- It is significant that three out of the top four turnkey systems vendors have suffered considerably at the balance sheet level in the last six months. Only Intergraph emerged relatively unscathed showing a substantial net income on steady 30%+ growth.
- Computervision, Calma, and Triad have all had tremendous short-term problems to overcome and face long-term strategic challenges as well. Being the largest turnkey systems vendors has often meant having bigger problems than the smaller vendors.
- Exhibit IX-6 shows the 1984 list of the largest turnkey vendors. There are likely to be many changes to this list in 1985.

EXHIBIT IX-6

LARGEST TURNKEY SYSTEMS VENDORS

RANK 1984	RANK 1983	COMPANY
1	1	Computervision Corporation
2	2	Intergraph Corporation
3	3	Calma Company
4	4	Triad Systems Corporation
5	11	McDonnell Douglas Information Services
6	6	Gerber Scientific
7	5	Computer Consoles
8	12	Ultimate Corp. (The)
9	10	HBO & Co.
10	8	Reynolds & Reynolds
11	7	Applicon
12	15	Control Data Corp.
13	9	C3
14	17	Ask Computer Systems, Inc.
15	13	Auto-Trol Technology Corp.
16	37	Daisy Systems
17	16	Evans & Sutherland
18	19	Shared Medical Systems
19	30	Symbolics
20	18	ADP
21	14	United Telecommunications, Inc.
22	25	Bunker Ramo Information Systems Division
23	36	Informatics General Corp.
24	20	Burroughs
25	21	Lundy Electronics & Systems, Inc.

- Topping the list of fastest growing turnkey systems vendors was Daisy Systems, a young CAE (computer-aided engineering) firm that has had outstanding success this past year and which continues that pattern into 1985. Second was 3-COM which has been successful in providing LAN products to corporate America and was the leading data communications turnkey systems vendor in 1984.
- Exhibit IX-7 provides the list of the top 25 turnkey systems vendors by 1984 growth rate.

EXHIBIT IX-7

FASTEST GROWING TURNKEY SYSTEMS VENDORS

RANK 1984	COMPANY	GROWTH 1983-1984 (Percent)
1	DAISY SYSTEMS	247%
2	3COM CORPORATION	238%
3	INFOCEL INCORPORATED	180%
4	SYMBOLICS	105%
5	DISPLAY DATA	85%
6	ULTIMATE CORP. (THE)	71%
7	INTERGRAPH CORPORATION	58%
8	SYSTEMS ASSOCIATES, INC. (SAI)	55%
9	ASK COMPUTER SYSTEMS, INC.	51%
10	CYCARE SYSTEMS, INC.	50%
11	MADIC CORPORATION	50%
12	AVANT-GARDE COMPUTING	50%
13	AGENA CORPORATION	50%
14	BRUNING C. A. D.	47%
15	INFORMATION TECHNOLOGY, INC.	43%
16	TELESIS SYSTEMS CORPORATION	42%
17	EVANS & SUTHERLAND	41%
18	GERBER SCIENTIFIC	40%
19	SCIENTIFIC CALCULATIONS	38%
20	SYSTEME CORPORATION	38%
21	BARRISTER INFORMATION SYSTEMS CO	33%
22	H.B.O. AND CO.	31%
23	COMPUTERVISION CORPORATION	30%
24	UNITED EDUCATION & SOFTWARE DATA	30%
25	TRIAD SYSTEMS CORPORATION	30%

X MICROCOMPUTER-RELATED REVENUE ANALYSIS

X MICROCOMPUTER-RELATED REVENUE ANALYSIS

- Software and services targeted for microcomputers continued as an important and distinctive part of the industry in 1984. In recognition of the growing role of microcomputer-related revenue, an analysis of companies providing these products/services is presented in this section.

A. INDUSTRY ANALYSIS

- Over 44% of the companies included in this industry research reported microcomputer-related revenue in one or more modes of service in INPUT's 1985 survey--a sharp increase over 1984.
- Exhibit X-1 details the percent of revenue related to microcomputers for companies that provide these products/services.
 - Twenty-three percent of these companies derive 100% of their information services revenue from microcomputer software or services. Another 12% derive 100% of their revenue in a particular "secondary" service mode from microcomputers.
 - Processing companies with microcomputer-related activities extend from the use of microcomputers as data entry devices to intelligent terminals linked to central processing services. In most cases, the

EXHIBIT X-1

AVERAGE PERCENT OF REVENUE RELATED TO MICROCOMPUTERS
FOR COMPANIES REPORTING MICROCOMPUTER REVENUE

TYPE OF COMPANY	MODE OF SERVICE		
	Software Products	Professional Services	Turnkey Systems
Processing Services (Percent)	57%	46%	73%
Number of Respondents	29	12	21
Software Products (Percent)	59	35	72
Number of Respondents	105	9	6
Professional Services (Percent)	40	35	47
Number of Respondents	19	42	7
Turnkey Systems (Percent)	45	37	60
Number of Respondents	17	5	47
Total (Percent)	56%	37%	63%
Total (Number of Respondents)	170	68	81

microcomputer is not the central source of the service. However, as noted below, processing companies in their search for stronger growth segments are frequently delving into secondary service modes with a focus on microcomputers.

- Professional services companies, like processing companies offering professional services, derive microcomputer-related revenue from such activities as microcomputer programming, consulting, and education/training.
- The majority of the microcomputer-related revenue of information services companies comes, however, from software products and turnkey systems. Across all providers of microcomputer products/services nearly 56% was derived from software products. That proportion is even larger for the turnkey systems mode, where over 60% of the revenue is from microcomputer products.
- The importance of microcomputers as a revenue producer for those who have entered this segment is evident in Exhibit X-2 which indicates the average microcomputer-related revenue across modes of service for these companies.
 - Processing and professional services companies generated 3% and 9%, respectively, of total revenue from microcomputer activities.
 - Turnkey and software products companies reported larger proportions of total revenue attributed to microcomputers at 13% and 15%, respectively.
 - Across the entire industry, these proportions accumulate to 8% of total information services revenue derived from the sale of microcomputer-related products/services.

EXHIBIT X-2

MICROCOMPUTER REVENUE BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY • SIZE (\$ Millions)	TOTAL MICROCOMPUTER- RELATED REVENUE (\$ Millions)	PERCENT OF TOTAL REVENUE
Processing Services		
• < \$10	\$204	3%
• ≥ \$10	260	2
All Processing Services	\$464	3%
Software Products		
• < \$10	\$881	17%
• ≥ \$10	654	13
All Software Products	\$1,535	15%
Professional Services		
• < \$10	\$558	17%
• ≥ \$10	136	3
All Professional Services	\$694	9%
Turnkey Systems		
• < \$10	\$466	14%
• ≥ \$10	255	11
All Turnkey Systems	\$721	13%
Total of All Companies		
• < \$10	\$2,109	12%
• ≥ \$10	1,305	6
Total	\$3,414	8%

- Smaller companies, in particular, rely on microcomputer revenue. Twelve percent of their total revenue is derived from such products/services.
- Exhibits X-3 through X-5 further detail this analysis for software products, professional services, and turnkey systems revenue by mode of microcomputer activity. Understandably, companies that receive a majority of their revenue from a particular mode of service have larger microcomputer-related revenue in that mode. However, there are some interesting results with respect to the microcomputer-related revenue of companies classified as processing services companies.
 - While 80% of the microcomputer software revenue is generated by software companies, half of the remainder (10%) is generated by processing companies providing microcomputer software.
 - With professional services companies generating 74% of the microcomputer professional services revenue, processing services companies are the second largest providers with 20% of the remaining 26%.
 - A similar trend is visible in the turnkey systems mode where processing companies provide 14% of the total microcomputer-related revenue to 75% for companies who are primarily turnkey systems companies.

B. INDUSTRY TRENDS

- The companies with the largest microcomputer software revenue are listed in Exhibit X-6. There are no surprises on this list, with many of the names familiar to industry analysts and laymen alike.
- Similar lists for microcomputer-related professional services and turnkey systems revenue, while less complete than the software products lists, are included as Exhibits X-7 and X-8.

EXHIBIT X-3

MICROCOMPUTER REVENUE RELATED TO SOFTWARE PRODUCTS
BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY • SIZE (\$ Millions)	TOTAL MICROCOMPUTER- RELATED REVENUE (\$ Millions)	PERCENT OF TOTAL REVENUE
Processing Services		
• < \$10	\$134	28%
• ≥ \$10	59	12
All Processing Services	\$193	20%
Software Products		
• < \$10	\$834	18%
• ≥ \$10	641	15
All Software Products	\$1,475	16%
Professional Services		
• < \$10	\$ 79	17%
• ≥ \$10	14	5
All Professional Services	\$ 93	13%
Turnkey Systems		
• < \$10	\$42	30%
• ≥ \$10	32	49
All Turnkey Systems	\$ 74	36%
Total of All Companies		
• < \$10	\$1,089	19%
• ≥ \$10	746	14
Total	\$1,835	17%

EXHIBIT X-4

MICROCOMPUTER REVENUE RELATED TO PROFESSIONAL SERVICES
BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY • SIZE (\$ Millions)	TOTAL MICROCOMPUTER- RELATED REVENUE (\$ Millions)	PERCENT OF TOTAL REVENUE
Processing Services		
• < \$10	\$ 26	12%
• ≥ \$10	122	12
All Processing Services	\$149	12%
Software Products		
• < \$10	\$ 26	6%
• ≥ \$10	1	0
All Software Products	\$ 27	3%
Professional Services		
• < \$10	\$425	18%
• ≥ \$10	117	3
All Professional Services	\$542	9%
Turnkey Systems		
• < \$10	\$ 14	9%
• ≥ \$10	0	0
All Turnkey Systems	\$ 14	5%
Total of All Companies		
• < \$10	\$491	15%
• ≥ \$10	240	4
Total	\$731	8%

EXHIBIT X-5

MICROCOMPUTER REVENUE RELATED TO TURNKEY SYSTEMS BY TYPE AND SIZE OF COMPANY

TYPE OF COMPANY ● SIZE (\$ Millions)	TOTAL MICROCOMPUTER- RELATED REVENUE (\$ Millions)	PERCENT OF TOTAL REVENUE
Processing Services		
● < \$10	\$43	17%
● ≥ \$10	79	13
All Processing Services	\$122	14%
Software Products		
● < \$10	\$21	27%
● ≥ \$10	12	11
All Software Products	\$33	17%
Professional Services		
● < \$10	\$54	30%
● ≥ \$10	5	6
All Professional Services	\$59	22%
Turnkey Systems		
● < \$10	\$410	13%
● ≥ \$10	224	11
All Turnkey Systems	\$634	13%
Total of All Companies		
● < \$10	\$528	15%
● ≥ \$10	320	11
Total	\$848	13%

EXHIBIT X-6

COMPANIES WITH LARGEST
MICROCOMPUTER-RELATED SOFTWARE REVENUE

COMPANY	MICROCOMPUTER REVENUE 1984 (\$ Millions)
Lotus Development Corp	\$140
IBM	135
Microsoft	123
Ashton-Tate	64
Tandy	55
Apple Computer	40
Micro Pro International	37
Digital Research	32
Software Publishing Company	23
Multimate International	20
Computer Language Research	15
Spinnaker Software	14
Computer Associates	13
Harris Technology Group	12
Martin Marrietta Data Systems	10

EXHIBIT X-7

COMPANIES WITH LARGE MICROCOMPUTER-RELATED PROFESSIONAL SERVICES REVENUE

COMPANY	MICROCOMPUTER REVENUE 1984 (\$ Millions)
Advanced Systems, Inc.	\$26
PAR Technology	17
Systems and Applied Sciences	14
Sachs/Freeman Associates, Inc.	12
Safeguard Scientific, Inc.	12
RGI, Inc.	8
Computer Data Systems, Inc.	7
Medicus Systems Corp.	5
Analytics, Inc.	5
Analysis & Programming Corp.	4

EXHIBIT X-8

COMPANIES WITH LARGE MICROCOMPUTER-RELATED
TURNKEY SYSTEMS REVENUE

COMPANY	MICROCOMPUTER REVENUE 1984 (\$ Millions)
Triad Systems Corp.	\$107
Computervision Corp.	92
Daisy Systems	59
Auto-Trol Technology Corp.	55
Symbolics	45
Gerber Scientific	40
Lundy Electronics & Systems, Inc.	37
3Com Corp.	27
Safeguard Business Systems	24
C3	21
United Telecommunications Inc.	21
Manufacturing Data Systems,	18
Baron Data Systems	18
Telesis Systems Corp.	17
Sycom	15
Cadline, Inc.	15
National Computer Systems	15
Moore Data Management Systems	13
Direct, Inc.	11

APPENDIX A: DEFINITION OF TERMS

APPENDIX A: DEFINITION OF TERMS

A. REVENUE

- CAPTIVE COMPUTER SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendors.
- NONCAPTIVE FOREIGN COMPUTER SERVICES REVENUE - Revenue received for computer services provided outside the U.S. from users who are not part of the same parent corporation as the vendor.
- NONCAPTIVE U.S. COMPUTER SERVICES REVENUE - Revenue received for computer services provided within the U.S. from users who are not part of the same parent corporation as the vendor.
- OTHER REVENUE - Revenue derived from lines of business other than those defined above.
- TOTAL COMPANY REVENUE - Revenue received from total computer services and other sources of revenue.
- TOTAL COMPUTER SOFTWARE AND SERVICES REVENUE - Revenue received from services provided by vendors that perform data processing using vendor computers (processing services) or that assist users to perform such functions on their own computers (software products and/or professional

services) or a combination of hardware and software integrated into a total system (turnkey systems). Revenue derived from computer services games or entertainment are excluded as are revenue derived solely from the resale of computer services on a retail basis.

B. SERVICE MODES

- PROCESSING SERVICES - Remote computing services, value-added networks, batch services, and facilities management.
 - BATCH SERVICES - This includes data processing performed at vendors' sites of user programs and/or data that are physically transported (as opposed to electronically by telecommunications media) to and from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include these expenditures by users who take their data to a vendor site that has a terminal connected to a remote computer for the actual processing.
 - FACILITIES MANAGEMENT (FM) (Also referred to as "resource management" or "systems management") - The management of all or part of a user's data processing functions under a long-term contract (not less than one year). This would include both remote computing and batch services. To qualify as FM, the contractor must directly plan and control as well as operate the facility provided to the user on-site, through communications lines or mixed modes. Simply providing resources, even though under a long-term contract and/or for all of a user's processing needs, does not necessarily qualify as FM.
 - REMOTE COMPUTING SERVICES - Provision of data processing to a user by means of terminals at the user's site connected by a data communications network to the vendor's central computer.

- VALUE-ADDED NETWORKS (VAN) - Intercommunications services between computing resources to move data and/or textual information. Provided by vendors through common carrier or special-purpose transmission facilities to move data and/or textual information. Special features of VANs that set them apart from conventional public networks include store-and-forward message switching, terminal interfacing, error detection and correction, and host computer interfacing.
- PROFESSIONAL SERVICES - This category is made up of services related to EDP, including software development, consulting, education and training, and facilities management. Services are sold to:
 - COMMERCIAL - which includes all nongovernment organizations.
 - GOVERNMENT - which includes federal, state, and local governments and their agencies.
- SOFTWARE PRODUCTS - This category includes users' purchases of applications and systems packages for use on in-house computer systems. Included are lease and purchase revenues, as well as fees for work performed by the vendor to implement and maintain the package at the user's site. Fees for work performed by organizations other than the package vendor are counted in professional services. There are several subcategories of software products.
 - APPLICATIONS PRODUCTS - These are software products that perform processing to service user functions. They consist of:
 - CROSS-INDUSTRY PRODUCTS - which are used in multiple user industry sectors. Examples are payroll, inventory control, and financial planning.

- INDUSTRY-SPECIALIZED PRODUCTS - which are used in a specific industry sector such as banking and finance, transportation, or discrete manufacturing. Examples are demand deposit accounting and airline scheduling.
- SYSTEMS PRODUCTS - These are software products that enable the computer/communications system to perform basic functions. They consist of system operations products, systems utilization products, and application development products.
- TURNKEY SYSTEMS - An integration of systems and applications software with hardware packaged as a single entity. The value added by the vendor is primarily in the software, either packaged or custom developed. Most CAD/CAM systems and many small business systems are turnkey systems. This does not include specialized hardware systems such as word processors, cash registers, and process control systems. In previous reports these companies have been referred to as "integrated systems" but the name was changed this year to the more common "turnkey systems."

C. TRENDS AND ISSUES

- EMPLOYEE PRODUCTIVITY - Average U.S. noncaptive revenue generated per employee.
- PROFIT MARGINS - Profits after taxes and extraordinary items.
- REVENUE GROWTH - Derived from one or more of the following:
 - ACQUISITION - Proportion of revenue increase derived from the acquisition of other companies.

- PRICE INCREASE - Proportion of revenue increase derived solely from increasing the price of services.
- REAL GROWTH - Proportion of revenue increase derived from all sources net of the effect of price increases and acquisitions.

APPENDIX B: INFORMATION SERVICES ACQUISITIONS
IN 1984

APPENDIX B

INFORMATION SERVICES ACQUISITIONS IN 1984

Acquiring Company	Company Acquired	Date of Acquisition
AGS Computers, Inc.	SDA Software, Inc.	1/84
Advanced Computer Management	CCI, Inc.	5/84
Amherst Associates	FinReport Systems, Inc.	4/84
Anacomp	2-COM Service Centers	7/84
Automatic Business Centers, Inc.	Union Data Services	4/84
BPI Systems, Inc.	Softrend, Inc.	8/84
Burroughs Corp.	Graphics Tehcnology	4/84
Calspan Corp.	Franklin Research Center	9/84
Compucare	Ohio Micro Systems, Inc.	4/84
Computer Associates International, Inc.	Sorcim Corporation	5/84
	Arkay Computers, Inc.	9/84
	Johnson Systems, Inc.	6/84
COMNET Corporation	National Systems Laboratories, Inc.	12/84
Computer Task Group, Inc.	Holvich Corporation	1/84
	Amtec Systems, Inc.	7/84
Condor Computer Corp.	Starsoft	2/84
Cullinet Software, Inc.	Bob White Computing and Software, Inc.	7/84
Cycare Systems, Inc.	DX Systems for Health, Inc.	6/84
	Healthcare Receivable Administrators, Inc.	6/84
DBA Systems	Logetronics, Inc.	4/84
Display Data Corp.	Dataline Corp.	2/84

APPENDIX B (Cont.)

INFORMATION SERVICES ACQUISITIONS IN 1984

Acquiring Company	Company Acquired	Date of Acquisition
Dun & Bradstreet	Thomas National Group A.C. Neilson	10/84 4/84
Equifax Inc.	Insurance Information Incorporated Alliance Insurance Management Systems, Inc.	10/84 10/84
First Financial Management	Financial Systems, Inc. United Computer Services	4/84 3/84
General Motors	Electronic Data Systems	6/84
Gerber Scientific	R.P.N. Systems, Inc. EOCOM Electronics Systems	5/84 6/84
Hale Systems	Pear Systems	11/84
Hayes Microcomputer Products	Softcom, Inc.	9/84
Honeywell	Digital Datacom, Inc.	11/84
Human Engineering Software	Childware	9/84
IBM	ROLM	10/84
Information Sciences, Inc.	National FSI, Inc.	6/84
MSI Data	Azurdata	11/84
MTECH	Data Information Services, Inc.	11/84
Management Science America, Inc.	DesignWare, Inc. Distribution Research Associates	7/84 8/84
McDonnell Douglas Corporation	Computer Sharing Services Inc. Science Dynamics Corporation Tymshare, Inc.	1/84 12/84 3/84

APPENDIX B (Cont.)

INFORMATION SERVICES ACQUISITIONS IN 1984

Acquiring Company	Company Acquired	Date of Acquisition
McGraw-Hill, Inc.	The Monchik-Weber Corporation	8/84
Pansophic Systems, Inc.	Christensen Systems, Inc.	11/84
Policy Management Systems	Compuclaim Corporation	12/84
Professional Computer Services	King Computer Management	6/84
R01-Teknekron Financial Systems	Emerlogic, Inc.	12/84
Rand Information Systems, Inc.	Conversions, Inc.	6/84
Safeguard Business Systems, Inc.	Office Automation, Inc.	12/84
Scientific Software - Intercomp	CRC Bethany	4/84
Spectro Industries, Inc.	S. B. Systems, Inc.	9/84
Summa Software Corp.	Select Information Systems, Inc.	10/84
Symantec Corp.	C & E Software, Inc.	9/84
TLS Company	Electronic Tabulating Corp.	5/84
	PBS Computing	5/84
Telecredit, Inc.	Light Signatures, Inc.	1/84
Trans Union Credit	United Credit Bureau of America	5/84
UCCEL Corporation	Spectrum Training Corporation	12/84
Paladin Software Corp.	VISICORP	11/84
Zitel Corp.	Gifford Computer Systems	9/84

APPENDIX C: METHODOLOGY AND RECONCILIATION

APPENDIX C: METHODOLOGY AND RECONCILIATION

- Industry performance data in 1983 and 1984 were established by two methods:
 - A census of all known computer services firms with U.S. noncaptive revenue of or exceeding \$10 million.
 - A stratified random sample of companies from a pool of all known companies with U.S. noncaptive revenue greater than \$250,000 but less than \$10 million.
- Data on the random sample companies were obtained through telephone interviews with company representatives. Data for the census companies were obtained from interviews and INPUT file data. In addition, data for public companies were obtained from published reports.
- Exhibit C-1 shows the reconciliation in number of companies between 1983 and 1984. The industry increased in known member companies by 21% to 7,323.
- Seventeen companies with revenues over \$10 million in 1983 were recategorized this year because they had 1983 revenue under \$10 million or did not meet the criteria for inclusion.
 - Forty-three companies were added to the census of companies with over \$10 million in revenue. This represents a 14% increase in the number of these companies in 1983.

EXHIBIT C-1

CHANGE IN NUMBER OF COMPANIES, 1983-1984

TYPE OF COMPANY *SIZE	NUMBER OF COMPANIES			PERCENT
	1983	1984	CHANGE	
Processing Services				
< \$10	2015	2018	3	0%
≥ \$10	120	119	-1	-1%
All Processing	2135	2137	2	0%
Software Products				
< \$10	2160	2376	216	10%
≥ \$10	74	81	7	9%
All Software	2234	2457	223	10%
Professional Services				
< \$10	1311	1350	39	3%
≥ \$10	76	95	19	25%
All Professional	1387	1445	58	4%
Turnkey Systems				
< \$10	1167	1227	60	5%
≥ \$10	42	60	18	43%
All Turnkey	1209	1287	78	6%
All Types	6965	7326	361	21%

- INPUT estimates that the number of companies with over \$250,000 and less than \$10 million in revenue increased by 318 in 1984. Each type of company increased in number with the largest increase occurring in the number of small software companies.
- The revenue reconciliation between the 1984 report on 1983 revenue and the 1985 report on 1983 revenue is included as Exhibit C-2.
- Overall, the 1983 revenue base increased 1% over the revenue reported in 1984. This increase is within acceptable confidence limits for this type of research report.

EXHIBIT C-2

CHANGE IN 1983 REVENUE, AS REPORTED IN 1985 RESEARCH

TYPE OF COMPANY *SIZE (\$ Millions)	1983 Revenue (\$ Millions)		CHANGE	
	1984 Report	1985 Report	\$ Millions	Percent
Processing Services				
< \$10	\$4,924	\$4,934	\$10	0%
≥ \$10	\$9,646	\$9,469	(\$177)	-2%
All Processing	\$14,570	\$14,403	(\$167)	-1%
Software Products				
< \$10	\$3,553	\$2,649	(\$904)	-25%
≥ \$10	\$3,954	\$4,887	\$933	24%
All Software	\$7,507	\$7,536	\$29	0%
Professional Services				
< \$10	\$2,439	\$2,402	(\$37)	-2%
≥ \$10	\$3,985	\$4,108	\$123	3%
All Professional	\$6,424	\$6,510	\$86	1%
Turnkey Systems				
< \$10	\$2,585	\$2,601	\$16	1%
≥ \$10	\$1,540	\$1,819	\$279	18%
All Turnkey	\$4,125	\$4,420	\$295	7%
All Types	\$32,626	\$32,869	\$243	1%

APPENDIX D: QUESTIONNAIRE

CAMP ID NO.: _____

Type: _____
(Census or Random)

1. Public _____

2. Private _____

3. Subsidiary/
Division _____

Company Name: _____

HQ Address: _____

City: _____ State: _____ ZIP: _____

Phone () _____

Name of President
or CEO: _____ Title: _____

Are you a subsidiary or division of another company? _____ (Yes, No)

What is the legal relation to parent: ☐ Subsidiary ☐ Division ☐ Other

Parent Company: _____

Is Parent company: ☐ Public ☐ Private Parent Co. ID _____

What is total Number of Employees at year end?

Number of employees associated with U.S.
non-captive computer services revenues:

1984		1983	
FYE	CYE	FYE	CYE

Internal Use

Data Compiled From:

☐ Annual Report, 10K, etc.☐ Interview with Company☐ INPUT Estimate☐ Other _____Verified with
Company:Yes ☐ No ☐Yes ☐ No ☐Yes ☐ No ☐Yes ☐ No ☐

Interviewer: _____

Date: _____

Person Interviewed:

Name: _____ Title: _____ Phone: () _____

Name: _____ Title: _____ Phone: () _____

1. What were the total company revenues for fiscal years ending:

FYE 1984 \$ _____
(000)

FYE _____
(month)

2. What were the total company revenues for the calendar year ending December 1984:

\$ _____ Growth from Calendar 1983 _____ %
(000)

	Calendar Year		
	1984	1983	
	(000)	(%)	(000)
a. Of your total calendar year revenue what revenue was derived from computer services? (or what percent)	\$	%	\$
b. Of your total computer services revenue what percent or amount was captive?	\$	%	\$
c. Of your total non-captive computer services revenue what percent or amount was derived from the U.S. market?	\$	%	\$
(the rest of the questions in the interview relates to the non-captive U.S. revenue, item c.)	(000)	(%)	(000)

3. What is your planned growth rate for computer services revenue for 1985?
 % (prefer response on U.S. noncaptive)

4. Please indicate the breakdown of U.S. Non-Captive Computer Services Revenue by service mode.

	PERCENT	
	Calendar 1984	Calendar 1983
Processing Service	_____ %	_____ %
- Remote Computing	_____ %	_____ %
- Batch Processing	_____ %	_____ %
- Facilities Management	_____ %	_____ %
	100%	100%
Software Products	_____ %	_____ %
- Applications	_____ %	_____ %
- Systems	_____ %	_____ %
- Service	_____ %	_____ %
	100%	100%
Professional Services	_____ %	_____ %
- Software Development	_____ %	_____ %
- Consulting	_____ %	_____ %
- Education and Training	_____ %	_____ %
- Facilities Management	_____ %	_____ %
	100%	100%
Turnkey Systems	_____ %	_____ %
- Hardware	_____ %	_____ %
- Software	_____ %	_____ %
- Support	_____ %	_____ %
	100%	100%
TOTAL	100%	100%

5. For each service mode, what percent of calendar non-captive U.S. Revenue was derived from cross-industry applications, and what percent was derived from industry specific applications? Indicate cross-industry applications and industry specific applications.

Service Mode and Hardware	Cross Industry Segment	% of Rev. Mix	% up From 1983	Industry Specific Segment (Industry)	% of Rev. Mix	% up From 1983
Processing Services _____ %		_____ %	_____ %		_____ %	_____ %
- Micro _____ %		_____ %	_____ %		_____ %	_____ %
- Mini _____ %		_____ %	_____ %		_____ %	_____ %
- Mainframe _____ %		_____ %	_____ %		_____ %	_____ %
100%	Total _____ % + Industry Total _____ % = 100%					
Software Products _____ %		_____ %	_____ %		_____ %	_____ %
- Micro _____ %		_____ %	_____ %		_____ %	_____ %
- Mini _____ %		_____ %	_____ %		_____ %	_____ %
- Mainframe _____ %		_____ %	_____ %		_____ %	_____ %
100%	Total _____ % + Industry Total _____ % = 100%					
Professional Services _____ %		_____ %	_____ %		_____ %	_____ %
- Micro _____ %		_____ %	_____ %		_____ %	_____ %
- Mini _____ %		_____ %	_____ %		_____ %	_____ %
- Mainframe _____ %		_____ %	_____ %		_____ %	_____ %
100%	Total _____ % + Industry Total _____ % = 100%					
Turnkey Systems _____ %		_____ %	_____ %		_____ %	_____ %
- Micro _____ %		_____ %	_____ %		_____ %	_____ %
- Mini _____ %		_____ %	_____ %		_____ %	_____ %
- Mainframe _____ %		_____ %	_____ %		_____ %	_____ %
100% 100%	Total _____ % + Industry Total _____ % = 100%					

6. During fiscal 1983 or 1984 did your company acquire any computer services firms? ☐ Yes ☐ No

6a. If Yes, please indicate company(s) acquired, service mode of acquired company, and revenue contribution from the acquired company.

	<u>Date</u>	<u>Name</u>	<u>Principal Service Mode</u>	<u>Revenue at time of Acquisition</u>
a.	_____, _____		PS <input type="checkbox"/> SW <input type="checkbox"/> PF <input type="checkbox"/> TS <input type="checkbox"/>	\$ _____
b.	_____, _____		PS <input type="checkbox"/> SW <input type="checkbox"/> PF <input type="checkbox"/> TS <input type="checkbox"/>	\$ _____
c.	_____, _____		PS <input type="checkbox"/> SW <input type="checkbox"/> PF <input type="checkbox"/> TS <input type="checkbox"/>	\$ _____
d.	_____, _____		PS <input type="checkbox"/> SW <input type="checkbox"/> PF <input type="checkbox"/> TS <input type="checkbox"/>	\$ _____
			1 2 3 4	

1. PS = Processing Services
2. SW = Software Products
3. PF = Professional Services
4. TS = Turnkey Systems

APPENDIX E: RELATED INPUT REPORTS

APPENDIX E: RELATED INPUT REPORTS

- Vendor Financial Watch, published quarterly.
- Company Analysis and Monitoring Program (CAMP) Company Directory, 1985.
- U.S. Information Services Industry Annual Report, 1984-1989, December 1984.
- ADAPSO 18th Annual Survey of the Computer Software and Services Industry, August 1984.

